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COMPUTERWORLD

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Hungry for bear? Western suppliers should expect to spend a minimum of two years and as much as $1 million before turning a dime of profit in the Soviet market. Page 93.

National Center for Atmospheric Research, a finalist in the second annual *Computerworld Smithsonian Awards,* is crunching massive amounts of data in an effort to pin down the global warming theory. Page 18.

OS/2 stays on outside looking in

ANALYSIS

BY PATRICIA KEEFE
CW STAFF

After the thunderous barrage of video images and pulsating music has faded from memory, what should stand out from last week's homage to Microsoft Corp.'s Windows 3.0 is not only how closely it resembles OS/2, but also the fact that it actually outshines the current family of OS/2 offerings in some areas.

For example, unlike OS/2's current DOS compatibility box, the Windows 3.0 environment has the ability to run DOS applications in more than 550K bytes of memory.

Windows 3.0 also provides an OS/2-like graphical user interface at a lower price and will fit within the confines of 1M byte of memory.

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Microsoft leads DOS revival

Users, software developers gush as polished Windows takes center stage

BY CHARLES VON SIMSON
CW STAFF

NEW YORK — Bill Gates moved across the City Center Theatre stage, very likely coached to appear warm but clearly struggling in the effort. His act wasn't very convincing, but then again, it didn't really have to be.

Microsoft Corp.'s chairman finally unveiled Version 3.0 of the Windows graphical user interface last week. By most accounts, the technology has converged at last with the needs and systems requirements of the average personal computer user. The resulting enthusiasm of the supporting cast of software developers and hardware OEMs has critics talking about a strong run for the Windows show.

"Take one look and you see that graphical is better than nongraphical. We can use our existing applications and get the software almost free on a lot of new systems," said Danny Moeller, manager of PC systems in the investment banking division at Merrill Lynch & Co. in New York. "We will certainly go to OS/2 eventually, but where it requires an analysis of real cost vs. planned benefit, you'd really have to think of a reason not to use Windows."

However, reasons are bound to crop up, according to analysts. Forrester Research, Inc., a Cambridge, Mass.-based market research firm, released a study on the day of the announcement that argues that the strength of Windows will aid OS/2 as it first gets users to go graphical and then demonstrates some limitations of DOS, such as the lack of multithreads and security.

"Windows will squeeze everything that is left out of DOS, and for the next couple of years, developers will make a lot of money from it," said William

Continued on page 116

What's with the box

Bill Gates' Windows 3.0 may be a simple graphics interface, but its introduction is backed by the following:

- A $10 million marketing budget
- A 10-month advertising campaign
- Plans to ship 40,000 demonstration disks
- Shipment of 120,000 copies to retailers for first-day display
- 30 systems vendors that have agreed to bundle with hardware sales

Photo: John Morris

Miffed Lotus wonders why Novell's condition changed

BY JIM NASH
CW STAFF

The explosive end to Lotus Development Corp.'s proposed merger with Novell, Inc. may have lasting repercussions — but probably only for the relationship between the two companies.

According to Lotus President and Chief Executive Officer Jim Manzi, Novell CEO Ray Noorda's "eleventh-hour, 59th-minute" demand that the merged entity split its board of directors with four representatives from each company killed the merger.

Manzi said that both firms had agreed before the April 5 announcement of their tentative merger that the new board would favor Lotus by a split of 4-3.

"I cannot come up with a coherent theory" to explain why Noorda made a "hard-and-fast" demand so late in negotiations, Manzi said. "If this was a [power-play] strategy, it was a silly strategy." The deal was proclaimed dead May 19.

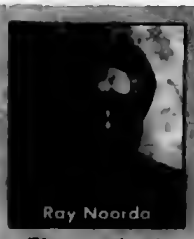
Whether the two firms will work together on marketing, support or development projects remains up in the air. Manzi has indicated that he will not pursue such ventures, while Noorda told reporters that it was a "long-

Continued on page 6

Jim Manzi

"Alliances seem to be important when people want their partners doing what they really want."

"Novell has 30 million outstanding shares and I talked to 10 million of them . . . What went on with his board, I don't know."



Ray Noorda

"I hope to continue the marketing and development activities already under way. We can continue to work together."

"It came to a point where we wanted to make sure shareholders would support the merger."

Photo of Jim Manzi: John Owens

CW Chart: Marie Haines

DEC shuffle will redeal old policies

BY MARYFRAN JOHNSON
CW STAFF

Digital Equipment Corp. is in the midst of substantial changes in the way it does business, preparing to lift its long-standing taboo against sales commissions, gearing up to pay dividends to stockholders and establishing between 20 and 30 individual profit-and-loss business units.

DEC customers should be seeing a more flexible, responsive sales force that is willing to cut better deals and move faster to resolve its business problems, as well as more competitively priced hardware as the company unbundles some of its services and support.

Analysts and organization sources last week confirmed several key changes quietly under way as the No. 2 computer vendor attempts to sharpen and re-

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Quotable

"The only area in which we're holding our own is in artificial intelligence. Maybe we can use it to develop an artificially intelligent approach to technology policy."

SEN. ALBERT GORE JR.
D-TENN.

At a hearing last week on U.S. technology policy. See story page 115.

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IN DEPTH

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Going the way of pedal pushers and fins on cars: Once the most ubiquitous sign of computing, the IBM 3270-type dumb terminal is becoming just that — terminal. According to a Computer Intelligence survey, only the government sector is planning on purchasing 3270s in any significant number in the future. Other pieces of soon-to-be computer memorabilia: The glass from the glassed-in houses . . . trusses from those who lugged the luggables of old . . . 'Snoopy' calendars plotted out on fan-fold computer paper . . . the electronics troubleshooter's alligator clips . . . time-sharing invoices . . . punch card debris.

How much is that software in the window? If it's IBM's, it's probably 10% more costly than the last time you looked. Page 29.

Alvin Upton

Reuben Lanttro's network unification plans for Cargill hit some pockets of resistance in Europe. Page 77.

EXECUTIVE BRIEFING

■ **Major changes are in the works** at DEC. The No. 2 computer vendor will decentralize much of its decision-making and try to revitalize its sales force with commissions and more flexibility to cut deals with clients. DEC also plans to pay shareholder dividends next year for the first time. **Page 1.** This week, DEC will announce several EDI products and services, as well as EDI alliances with AT&T and others. **Page 4.**

■ **High costs remain a huge barrier** to the adoption of imaging technology, said attendees at the banking industry's largest technology convention. The expense problem is particularly acute for small and medium-size banks. Separately, Mellon Bank and BancA will ally with Wang to develop and market an image system for large banks. **See stories page 8.**

■ **Selling computers to the Soviets** has enormous profit potential, but enormous perils loom as well. Obstacles include software piracy, strict export rules and, above all, the huge understanding gap between free enterprise and a planned economy. First of a two-part series. **See stories pages 93, 97.**

■ **Microsoft Windows 3.0** made its long-awaited debut, providing impressive graphical capabilities but also rekindling the great debate concerning DOS-to-OS/2 migration. While some say Windows will show the need for migration, others believe its enhancements will prolong the life of DOS for most applications for as long as three years. **See stories pages 1, 116 and 117.**

■ **Lotus and Novell customers** expressed little concern about the collapse of the two organizations' planned merger; some were even relieved. **Page 1.** The breakup was apparently due to an about-face by Novell Chairman Ray Noorda, who sought last-minute changes to terms he had agreed to earlier. **Page 6.**

■ **Network decisions can alter the way a company does business,** often for the better. Unless proper allowances are made, however, the outcome can just as easily be disruption and resentment. Firms often fail to realize that network planning involves more than just mapping out connections. **Page 77.**

■ **VSAM forever:** Many IS shops, including some running IBM 3090s, continue to resist relational databases. Some say they're too costly, while others simply don't see the need for them at all. But they do risk being locked into old applications as many software developers won't upgrade their non-RDBMS-based products. **Page 29.**

■ **The only hope of meeting the cost-justification challenge** is to prove the technology case in business language. That requires understanding bottom-line concepts, such as risk reduction and competitive advantage, that go beyond mere dollars saved. **Page 75.**

■ **Managers of global networks,** who are in growing demand, must grapple with a kaleidoscope of national diversity. Countries vary greatly in communication infrastructures, adoption of technical standards, tariffs and controls over use of equipment and export of data. **Page 98.**

■ **On-site this week:** Fast and aggressive describes both the product line and the information systems at L.A. Gear. Eschewing both wingtips and mainframes, the Ontario, Calif.-based shoe and active-wear maker keeps running thanks to Hewlett-Packard RISC-based minicomputers and its knack for hiring IS talent away from others. **Page 33.** Down the freeway in Tustin, Calif., TRW's customer service division uses information technology to improve maintenance of microfilm equipment. Rosh Intelligent Systems' diagnostic software allows laptop-toting technicians to call up repair histories of the machines they service. **Page 56.**

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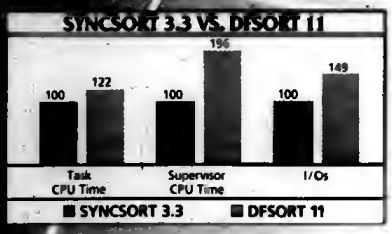

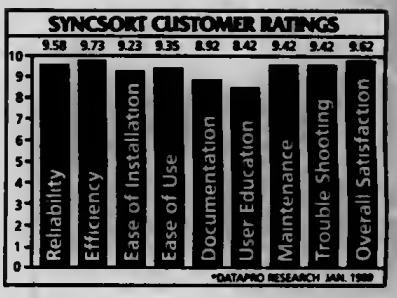

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IBM reopens benchmark feud

BY MARYFRAN JOHNSON
CW STAFF

IBM revisited its own Waterloo last week, armed with better hardware and aiming to rewrite a humiliating battle in its benchmark history.

The computer giant released an independently audited, rerun set of the California Department of Motor Vehicles benchmark test results. The original results led to IBM's defeat some 18 months ago by its fiercest rival in transaction processing, Tandem Computers, Inc.

"Tandem has been saying that a 5-CPU Cyclone outperforms our 3090 Model 400S," said Irving Wladawsky-Berger, assistant general manager for development at IBM's mainframe systems division. "Well, the facts are that a 5-CPU Cyclone is less than a 3090 Model 180J."

"We stand by what is on the record," said Praful Shah, corporate marketing manager at Tandem. "What IBM is doing is vendor repositioning — what they would like the world to view, not the way the customer views the world."

Less is more

IBM says its latest running of the California DMV benchmark showed the same job running faster while using only a portion of a single processor

Source: IBM CW Chart: Paul Mock

This strange saga began in late 1988, when IBM lost the motor vehicles department sale based on benchmark testing in which a Tandem VLX machine outperformed a 3090 Model 400S. The department is already midway through its five-year project to move its enormous databases of driver and vehicle registrations to Tandem's relational database system.

By reopening the subject now, IBM hopes to both salvage the sullied reputation of its DB2 relational database management system and disarm a successful marketing tool that Tandem has been wielding against them.

"This is an extraordinary thing for IBM to do," said Peter Burris, an analyst at International Data Corp. in Framingham, Mass. "There were some real pride issues at stake here."

When Tandem launched its Nonstop Cyclone marketing campaign last fall — using the benchmarks to compare the Cyclone favorably with a 3090 — the old wound began to ache.

So IBM contacted the California department, got copies of the benchmark tapes and reran the performance tests in its laboratories in Gaithersburg, Md. The independent test auditing was done by CSC Partners in Boston.

IBM freely admitted it reran the tests on better hardware, with a newer release of DB2 and more careful tuning to eliminate the I/O throughput bottlenecks that ruined its last performance. This time, the company used an Enterprise System/3090 Model 180J, a one-processor mainframe about 15% faster than the individual CPUs in the quad-processor Model 400S used in the original benchmark.

The results IBM released last week show a 40% improvement in CPU usage, faster response times, higher maximum data transfer rates and shorter batch elapsed times — all compared with its 1988 performance.

One of the original test results, for example, showed that it took DB2 nearly 60 hours to reorganize a data table and 31 hours to reorganize a set of indexes. The rerun tests paint a dramatically brighter picture: 2.8 hours to reorganize that same data table and one hour to reorganize the indexes.

IBM also notified the department of the rerun performance tests.

Oracle shuffles board, corporate positions

BY JEAN S. BOZMAN
and NELL MARGOLIS
CW STAFF

REDWOOD CITY, Calif. — As Oracle Systems Corp. closes out a fourth quarter that it pledged would be free of surprises, analysts were at pains last week to ferret out any hidden messages obscured by a flurry of upbeat strategy announcements.

Unnerved by a surprise $15 million profit shortfall in the previous quarter, few analysts were willing to accept at face value Oracle's announcement that it has once again reorganized its U.S. operations, and some were puzzled by the abrupt and virtually unremarked departure of the head of Oracle's high-flying European operations.

"Something seems wrong here," said Robert Anderson, who follows Oracle for Sutro & Co. in San Francisco. "Over the next 30 or 45 days, we'll probably find out what."

Oracle announced a corporate reorganization that consolidated control in President and Chief Executive Officer Lawrence J. Ellison, newly named chairman. U.S.-based operations were reorganized as a wholly owned subsidiary, Oracle USA, on an equal footing with the firm's 33 worldwide subsidiaries, according to Peter S. Tierney, senior vice-president of marketing at Oracle.

In another move, Geoffrey Squire, CEO at Oracle Europe, is now president of worldwide distribution operations and corporate executive vice-president — the first person at Oracle to command the latter title. In addition, according to an Oracle representative, Squire will assume the responsibilities previously held by John R. Luongo, most recently senior vice-president of Oracle's international division, who is leaving the company.

Within hours of releasing word of the reorganization, Oracle called an analysts' teleconference to announce a prized marketing agreement with Digital Equipment Corp. Under the terms of the agreement, longtime Oracle competitor DEC will sell several Oracle financial application packages that do not compete with its own offerings.

What raised a red flag for some analysts was Oracle's cursory treatment of the resignation of Luongo, a 35-year-old executive who for the the past eight years has led what is now the firm's fastest growing, most successful division.

Luongo told *Computerworld* that his resignation — a move be said be made wholly for personal reasons — dates back to February but was deferred when the unanticipated third-quarter stock decline temporarily derailed his plan.

"I'm always worried when an important executive leaves a company," said Timothy McCollum, an analyst at Dean Witter Reynolds, Inc., "but there's no special reason to worry about this one."

Not all analysts agreed. Some voiced concern that Luongo, a seasoned veteran of international business with particular experience in the Orient, will be replaced by Squire, a UK-based executive with solid European business credentials but no substantial Pacific Basin experience.

Luongo will leave to Squire a fiefdom that provided 48% of Oracle's $600 million 1989 revenue. "It's true; [Squire] has a lot to prove and very big shoes to fill," McCollum said. "We'll have to wait and see."

DEC to take aim at company communications with EDI

BY MARYFRAN JOHNSON
CW STAFF

BOSTON — Digital Equipment Corp. plans to join forces Wednesday with 20 third-party vendors to announce a suite of electronic data interchange (EDI) products and document management software, services and tools.

Speeding the flow of documents within a company and among several companies is the focus of what DEC will unveil as its "comprehensive program of software products." While the Maynard, Mass.-based company has offered EDI products in the UK, it has never made any available in the U.S.

One of the more surprising parts of the announcement will be a DEC alliance with AT&T to provide value-added network (VAN) services to EDI providers, industry sources confirmed. A VAN is a packet-switched network service that moves data for sites that cannot afford their own private packet-switched or dedicated T1 networks, such as the remote offices of a corporation.

Dave Atlas, an analyst at International Data Corp. in Framingham, Mass., said the combination of DEC and AT&T is potentially powerful because the two firms could provide the network connections, add the services and help customers set up an EDI system using the X.400 standard electronic mail protocol. "It really gives EDI products a helping hand when a company can just put its EDI message in an X.400 envelope," Atlas said. "This could blow away the small third-party vendors."

Other companies expected to unveil their first EDI applications include Cincom Systems, Inc., Ask Computer Systems, Inc. and Ross Systems, Inc.

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Closing Arguments

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Today, some software companies claim that their software products are "open." They may even graft the word onto their product names. It is a confusing situation, but a clear definition of "open" is finally emerging.

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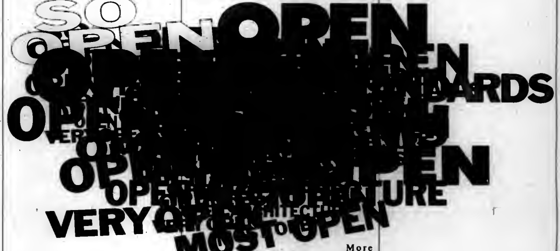

More specifically, a database is open if it works with other vendors' databases. For example, ORACLE provides access to IBM's DB2, SQL/DS and DEC's RMS.

An open database should also work with other vendors' applications. ORACLE works with DEC's All-in-1, DG's CEO, IBI's Focus and SAS. And it supports PC and Mac software like Lotus 1-2-3, WordPerfect, Borland's Paradox and Apple's Hypercard. Even Dbase applications run on ORACLE.

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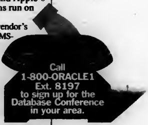

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GAO finds security slips

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — Two congressmen said last week they will seek legal sanctions against federal agencies for alleged failure to comply with the 1987 Computer Security Act. The lawmakers said agencies have "thumbed their noses at the act," thereby leaving some of the government's most important and sensitive systems exposed to fraud, abuse, espionage and hacker mischief.

The threat of legal penalties, primarily the cutoff of funds for new computer systems, was provoked by an audit just released by the U.S. General Accounting Office (GAO) that showed the planning and review process mandated by the 1987 law has done very little to strengthen computer security within the U.S. government.

Best and worst

An audit of 22 systems at federal agencies showed full implementation of planned security controls in some areas and no implementation at all in others

Security control	Number planned	Number implemented
Assignment of security responsibility	7	7
Audit and detection	7	7
Confidentiality controls	3	3
User identification	2	2
Risk assessment	11	1
Security specifications	10	0
Design review and testing	11	0
Certification/accreditation	14	0

Source: U.S. General Accounting Office

CW Chart: Paul Mock

Officials have generally viewed the submission of comprehensive computer security plans as a reporting requirement, not a useful management tool, the GAO said. The audit agency said the plans, first submitted a year ago, were flawed in a number of respects. A sample taken by the GAO showed that only 55 of a planned 145 security controls have been implemented.

The GAO looked at 22 systems at 12 civilian agencies, including the Social Security Administration, the Internal Revenue Service, the Federal Aviation Administration, the Customs Service and the Patent and Trademark Office. The systems contain sensitive but unclassified information.

"People in the U.S. are under the illusion that tax information is private, that social security data is secure, that patent applications with technical information are held private and that government movement of financial resources is protected from theft or diversion," said Rep. Robert Torricelli (D-N.J.). "None of this is true. It's a disaster waiting to happen."

Jack L. Brock Jr., the GAO's director of government information and financial management, acknowledged that no disaster is known to have occurred as a result of the security flaws outlined in the report. He said the problems cited boil down to a lack of top management attention.

GAO listed 17 areas in which agencies had promised to improve computer security but had largely failed to do so. They include such things as security training, contingency planning, data integrity and validation controls and design review.

Rep. Dan Glickman (D-Kan.), sponsor of the Computer Security Act, called the GAO findings "abominable," saying computer security has a low priority in the government. He said he will support a plan by the White House Office of Management and Budget (OMB) to send teams to the agencies to ensure that computer plans are enacted.

Torricelli said, "If the OMB plan doesn't get the attention of senior management, the legal sanctions will."

Novell asked Lotus for too much, too late

ANALYSIS

BY PATRICIA KEEFE
CW STAFF

It appears that last-minute Machiavellian power-play politics put the brakes on the short-lived engagement between Novell, Inc. and Lotus Development Corp.

Most observers are betting that an attempted coup two weeks ago by Novell Chief Executive Officer Raymond Noorda backfired, catching Lotus President and CEO Jim Manzi flat-footed and quashing what some saw as an unlikely coupling to begin with.

Noorda, who would have been the combined entity'a chief shareholder, successfully angled for chairmanship and retention of the Novell name before Manzi put his foot down and rejected Noorda's request for a 50/50 split of directorships.

Manzi said he objected to a split board because of the danger of deadlock. In the event of a tie vote, the chairman — in this case, Noorda — typically casts the deciding vote. If Noorda had gotten his way, analysts said, he would have been in the catbird seat.

A quick look at the brief history of this whirlwind romance between the industry leaders in spreadsheet and network operating systems suggests that divergent managerial styles, rather than cultural differences, are what helped to sink the merger.

Clearly, Lotus does not intend to reopen the talks. "In all candor, it is the furthest thing from my mind right now," a baffled and angry Manzi said last week. In an interview earlier in the week, Manzi had suggested that "a whole lot of bad faith" was involved with Novell'a eleventh-hour attempt to renege on an earlier agreement to a 4-3 board split.

Although he rejected Noorda'a claim that the two firms already have some joint efforts under way, Manzi did not close the door to future development or marketing activities with Novell. Analysts said this is because Lotus needs Novell's expertise to fuel its network diversification strategy.

Manzi has said repeatedly that he does not know why Noorda hinged the merger on a concession that he knew he was not going to get.

Few observers, Manzi included, were willing to buy Noorda'a attempt to blame both investors for being spooked by the financial terms of the deal, which was perceived to favor Lotus shareholders, and his nervous board of directors determined to enforce a "merger of equals." Manzi pointed out that "never once after April 5 were discussions about price ever raised."

However, Craig Burton, a former Novell executive who now publishes a series of network-related newsletters, said he saw some truth in Noorda'a defense. Burton pointed out that Noorda's style is to do things without necessarily consulting his hand-picked board or executive staff first. Agreed one Wall Street analyst, "He leaps before he looks around and asks other people's input."

At Lotus, by contrast, the merger plans were allegedly common knowledge among the top 12 executives, reflecting Manzi's more open, straightforward approach.

As a result, Novell board member Kanwahl Rekhi found out about the merger plans only after receiving a call from Manzi on the subject. Up to the day before the announcement, only a handful of Novell executives knew what was going on, sources said.

Noorda has always been able to sell his merger and buyout plans to his staff and shareholder constituents. But not this time, Burton said. "Employees at the company were not particularly happy with the prospect, and I know investors were not pleased," added a second Wall Street analyst.

Burton said he believes Noorda was told to go back and cut a better deal. Otherwise, he added, Novell shareholders would probably have killed the merger. That'a when things got dicey.

The problem was that in his haste to cement the deal, Noorda initially quickly agreed to a series of points — the stock swap and a vice-chairmanship position — and then allegedly proposed the board split of three Novell and four Lotus directors. He signed a letter of intent to merge under those terms.

Noorda'a failed attempt to take control of the merged company stoked rumors that Novell is up for sale. However, Burton maintained that Noorda will never settle for a merger that does not provide him with a significant, active role in the direction of the company.

Lotus/Novell

FROM PAGE 1

term" prospect.

Novell stock fell after the news of the proposed merger was first announced, despite an otherwise rising market. Prices quickly rebounded almost two points early Monday after the merger's demise. Investment analysts largely viewed the deal as an unlikely acquisition of the Provo, Utah-based network-operating system maker by Lotus, a Cambridge, Mass.-based software company. That impression was not lost on customers.

At Martin Marietta Corp.'s information systems group, computing standards manager Alan Soucy said Novell will be better off without the merger and that Lotus would have gained more from being a standard on local-area networks.

"To me, it would have been [Novell] Netware with a spreadsheet, and I don't find that all that strategic," Soucy said.

Other Lotus and Novell users said they felt insulated from the events, chalking up the machinations to business-as-usual. None said they would abandon either product based on the news.

"So what?" asked Sheldon Laube, national director of information and technology at Price Waterhouse in New York. Laube, who manages a large installed base of both companies' products, said, "Both companies are highly stable and highly successful."

Shareholders had a far less laissez-faire attitude. Although it had been minimized by both Manzi and Noorda, some Novell shareholders had objected to the deal because they would receive virtually no premium for their stock in the merger. A Novell shareholder suit was almost immediately filed after the announcement.

If anything, the deal'a dissolution has elicited relief from much of the high-tech community. Michel Guite, a vice-president at Salomon Brothers, Inc. in New York, said, "I'm not really sorry to see it fall apart, because investors really didn't like it."

When asked late last week if pressure from investment bankers had forced Novell to make the demand, Noorda said, "That's not quite true," but would not elaborate further. He said Novell directors and merger advisers "recommended" board parity at a meeting May 18 to best represent "a merger of equals." May 18 was the second deadline the two firms had set to sign a letter of intent.

Further negotiations on the issue were apparently rejected by both parties. Noorda said Manzi's concessions, including changing the new company's name to Lotus/Novell and installing Noorda as chairman of the new board, were not enough to assuage Novell board misgivings. Manzi dismissed without comment suggestions that he might have negotiated a 4-4 board that would elect a ninth member.

Executives at 3Com Corp., one of Novell's peripheral competitors, expressed disappointment about the breakup. "My concern is with the industry in general," 3Com CEO Bill Krause said. "This creates a little bit of uncertainty in the market."

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NEWS SHORTS

CA income grows by 21%

Computer Associates International, Inc. closed the book on the first, and possibly the last, year spent digesting last September's hefty Cullinet Software, Inc. acquisition, President Anthony Wang said. When all was said and done, CA reported fiscal 1990 revenues up 5% to $1.2 billion and net income increased 21% to $150 million. Year-to-year comparisons for the fourth quarter ended March 31 showed a 3% revenue increase, with profits up 58%. CA's "good performance in a year characterized by the disruptions occasioned by the Cullinet acquisition is remarkable," Wang said.

Novell revenue, profit up

Novell, Inc. reported a 9% increase in second-quarter revenue figures over the same period last year. Net revenue for the Provo, Utah-based network operating system maker rose to $120 million, up from $110 million for the second quarter of 1989. The quarter, which ended April 28, saw a 78% jump in net income over the second quarter of last year. Income hit $[illegible].5 million, compared with $11.5 million a year ago. Software sales expanded to 75% of Novell's total revenue, which was 73% for the first quarter of 1990.

Rolm ventures up to DEC

An IBM-like alliance was announced that Rolm Systems Co. and DEC may be happy going steady. Rolm announced last week that it will tie its [illegible] Communications System with Digital Equipment Corp. VAXs via DEC's Computer Integrated Telephony program. The announcement came a week after DEC announced that its Colorado family will link its hosts to other private branch exchanges besides Rolm's, including those of Rolm competitors, AT&T and Northern Telecom, Inc.

Cramming more data onto lines

Spectron Communications Corp. has enhanced two of its Datalink 3[illegible] data compression products to allow multiple high-speed devices to send data at full throttle over low-speed analog or digital lines. The $11,000 PB-8 expansion adder can cut two inputs of up to 64K bits/sec. each, while the $15,900 XB-2 handles four 128K bits/sec. inputs.

Creaking mail

The tangle of multivendor electronic-mail connections based on the CCITT X.400 standard got even thicker last week. Soft-Switch, Inc. announced that its X.400 Gateways product would support E-mail services from the following vendors: General Electric Information Services, AT&T, France Telecom's Transpac, Infonet and British Telecom. The gateway is said to connect these services through Soft-Switch Central software to more than 40 E-mail systems. Meanwhile, MCI Communications Corp. and Western Union Corp. announced an agreement to merge their E-mail systems, the Western Union 400 service and MCI Mail's Exchange 400.

Cincom adds CUA

The latest version of Cincom Systems, Inc.'s Control-Manufacturing, an integrated planning, operations and financial management system for manufacturers, will sport a new user interface based on Common User Access standards, the company said last week. Release 7.0 will be generally available for the DEC VAX/VMS platform, as well as the IBM MVS and VSE environments, by September, Cincinnati-based Cincom said.

Compaq stock splits

The one downside to watching your company's stock soar to an unprecedented trading high, Compaq Computer Corp. Chairman Ben Rosen noted, is the realization that the price might be winging past the wallets of investors who like to buy blocks of 100 shares. Compaq investors, however, can heave a sigh of relief. The day after Compaq hit its all-time high of 122%, the firm's board voted a two-for-one stock split.

More news shorts on page 115

Imaging snubs smaller banks

BY J. A. SAVAGE
CW STAFF

SAN DIEGO — Midsize banks are anxious to use imaging technology to process checks and documents, but vendors are only offering technology that suits the nation's largest banks, according to speakers at the American Banking Association Operations & Automation Conference last week.

"Image holds the potential to revolutionize the back office," John Singleton, president of Security Pacific National Bank, told the conference attendees. However, he added that price, particularly the cost of storage, is too high even for the big banks.

While imaging garnered the bankers' attention — one entire day of the three-day conference was devoted to the subject — it also engendered trepidation.

"The banking industry has never done anything this large before," said John Shain, president of Littlewood, Shain & Co. in Exton, Pa.

Amid a flutter of fake check samples rivaling a forgery convention, two vendors — IBM and Unisys Corp. — vied for the attention of bankers. However, systems from those vendors are expensive, with a scaled-down configuration with no storage beginning around $2 million.

Two more vendors, NCR Corp. and TRW Financial Systems, Inc., promised low-end systems, but neither has products available.

"The big banks do it because they want to be the technology leader, but mid-tier banks have to cost-justify," said Michael Raines, senior financial industry consultant at Unisys. "It will be some time before we figure out how to cost-justify it for them."

"It's not the technology, it's the affordability," agreed Robert Soucy, executive vice-president of the consumer banking group at Vermont National Bank.

Other users at midsize banks, such as Terry Saxsma, vice-president of the Bank of Highland in Highland, Ind., agreed: "The price barriers haven't been broken." Highland Bank, for instance, employs six clerks for check processing, according to Saxsma.

Even for bankers whose budget is not a drawback, there are concerns that the technology has not stabilized. Speakers and users, such as Pittsburgh-based Mellon Bank Corp.'a senior vice-president, Gilbert Arbuckle, complained that there is no standardization among image processing vendors and that imaged documents may not stand up in court, an issue that has yet to be tested.

Ten years ago, the banking industry assumed it would have little or no check processing in the 1990s, according to Shain. Bankers predicted that bank cards, or debit cards, would eliminate checks, but the paper flurry of checks is constantly increasing — to about 50 billion this year, he said.

Not only are the attendant processing costs increasing with the number of checks, but the clerical labor source is also drying up, Singleton said.

Wang position boosted by strategic bank alliance

BY SALLY CUSACK
CW STAFF

LOWELL, Mass. — Wang Laboratories, Inc., BankA Corp. of Dallas and Pittsburgh'a Mellon Bank Corp. jointly announced last week that they have signed a letter of intent to form a strategic alliance to develop and market an integrated image-based system tailored specifically to large commercial lending and financial institutions.

"Wang has been taking an aggressive focus on customer satisfaction, product rollout and technical support," said Roger Sullivan, a vice-president at BIS CAP International, Inc., a Norwell, Mass.-based consulting firm. "The fact that major corporations such as Mellon Bank are backing Wang at this time shows a major vote of confidence for the company."

The Massachusetts minicomputer maker has been working with Mellon and BancA for the past year to develop an imaging system for simplifying the underwriting, review and credit-approval process. While Wang and Mellon are jointly developing the hardware processing system, BancA's Power 1 business application software will serve as the core. The software, initially introduced for the Wang platform in 1987, was designed to focus on front office functions of commercial and lending institutions. Power 1 software runs on the Wang VS and personal computer 200/300 platforms and uses the Wang Professional Application Creation Environment, the Wang Integrated Image System and the Wang Freestyle PC system.

According to John R. Cook, president and chief executive officer at BancA, the new system will integrate loan accounting, word processing, exception tracking and spreadsheet analysis. It is expected to go into production today at Mellon, with Wang responsible for marketing activities.

In a separate announcement last week, Wang released a marketing agreement with Southern Electrical International, Inc., under which both companies will market a product designed to integrate SEI'a Norma mainframe software with Wang's document image processing offerings.

Hitachi Data to strut its mainframe stuff

BY J. A. SAVAGE
CW STAFF

Leaping ahead of the pack in mainframe power, Hitachi Data Systems Corp. (HDS) will introduce its new computer, codenamed Andromeda, next week. While the company is guarding details, users and analysts said that the machine will accommodate a 100 millions of instructions per second (MIPS) uniprocessor up to a four-way processor capable of 300 MIPS.

The current leaders in mainframe power in the IBM world are Amdahl Corp.'a four-processor 5990 Model 1400 system and IBM'a six-processor 3090 Model 600J, which rank in the 100- to 120-MIPS range.

For two years, HDS trailed its two rivals in the market for top-end performance — its high-end model, the AS/EX 100, is rated at about 100 MIPS. During that time, the firm (formerly National Advanced Systems) was sold by National Semiconductor Corp. to Hitachi Ltd. and General Motors Corp.'s Electronic Data Systems division.

Unlike the high-end Amdahl and IBM machines, HDS' mainframes have remained air-cooled, thus lessening the cost of installation. With Andromeda, that is set to change.

According to analysts, the new mainframe will require liquid cooling.

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Confirm system on schedule, but future questioned

NEW YORK — Four travel industry giants convened to allay any doubts that their Confirm central reservation system (CRS) is behind schedule. The partners said the $125 million information systems project has entered the programming stage and will be delivered, as promised, in early 1992.

Confirm is an information service and reservation system that will contain hotel and car rental data and operate much as airline reservations systems do.

Confirm will run on an IBM mainframe out of a central location managed by the Confirm partners, with hotels and car rental companies providing information for the service. Travel agencies, corporate travel departments and other end users will then access Confirm via terminals and personal computers linked to existing systems such as American Airlines' Sabre.

However, industry watchers question the ultimate success of the project. Most troubling is that in the two years since Confirm was announced, the four partners have not attracted other major hotels and car rental companies. In fact, some hotels have said they will not sign up.

"We looked very closely at Confirm two years ago when it was in its early conceptual stages," said Bill Watson, vice-president of strategic marketing at ITT Sheraton Corp. in Boston. "We concluded that we didn't have the time or inclination to risk developing a CRS by committee."

Watson's thoughts were echoed by Keith Barlow, vice-president of reservations and systems development at Best Western International. "We consider our reservation system part of our marketing system and as such is a strategic component," Barlow said. "We'd just as soon keep that capability in our own hands to be able to change it on our own timetable."

Without the participation of most of the hospitality industry'a large players, the service'a utility to travel agents and other users remains doubtful.

Despite these doubts, the Confirm partners presented the positive aspects of the project. "We realize that it's been two years since we've said anything publicly," said Russell J. Harrison, president of AMR Information Services, Inc., the American Airlines affiliate that is acting as lead developer on the project. "So we wanted to let everyone know that we're going ahead, we're on time, and we four partners still like each other and are working well together."

Confirmed partners

Confirm is a joint-development deal between AMR Information Services (AMRIS), Budget Rent a Car Corp., Hilton Hotels Corp. and Marriott Corp. Approximately 300 people from the four partners are working on Confirm, although the majority of the 200 programmers are from AMRIS. The other partners are providing feedback about Confirm through IBM's Joint Application Design methodology.

The project has been spun out into a separate entity called the ABHM Partnership in Carrollton, Texas. Development work is being done in ABHM facilities on an IBM 3090 Model 380J computer, although the resulting Confirm service will run on IBM's unannounced Summit when it becomes available, executives said. Developers are using Texas Instrument, Inc.'a Information Engineering Workbench to build Confirm.

When finished, Confirm will provide on-line data about room availability, special rates, agent discounts and guest preferences. It also will offer a yield-management system, so hotels and car rental firms can offer competitive rates and interfaces to property management systems.

A working Confirm system will be cut over for testing by ABHM users and partners during 1991, and an early version will be demonstrated this summer.

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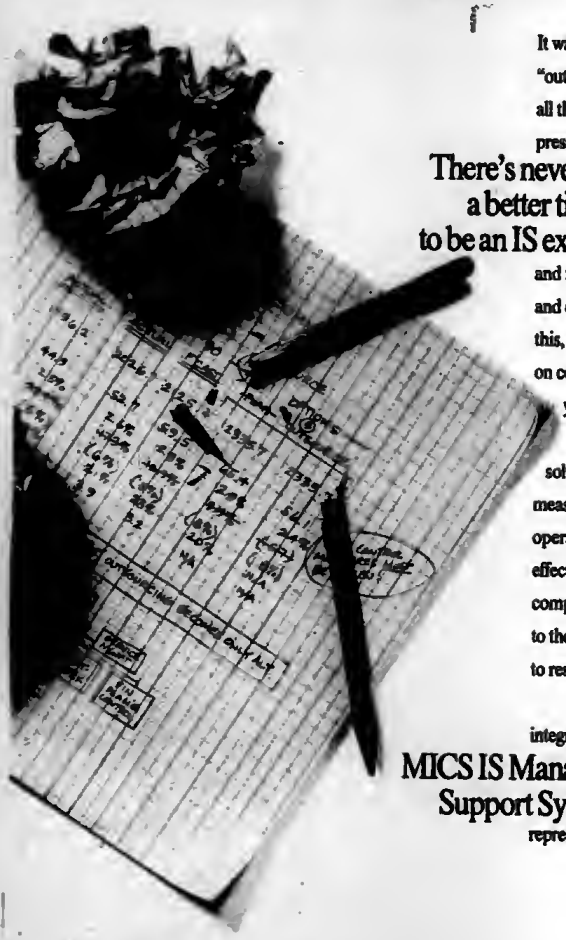

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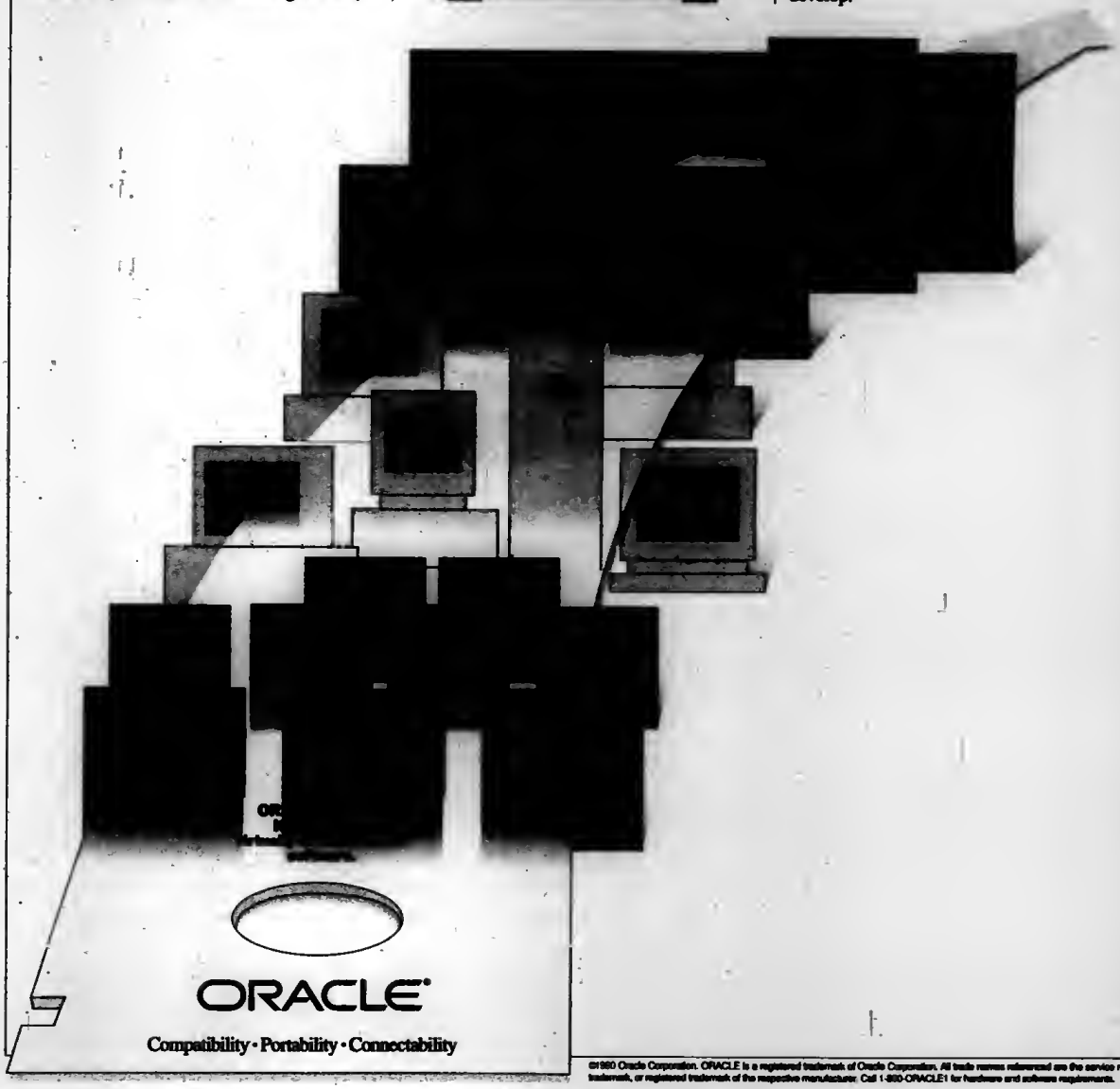

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AT&T adds high-speed data to virtual net service

BY ELLIS BOOKER
CW STAFF

NEW ORLEANS — AT&T's virtual networking service will now support high-speed data, the carrier announced at the International Communications Association (ICA) conference here last week.

Bearing witness to the trend toward increasingly sophisticated, high-speed virtual networks, which provide the features and functions of a private network using a carrier's shared, public facilities, some ICA attendees predicted the eventual demise of private networks owned and maintained by corporations.

AT&T's Software Defined Data Network (SDDN) will be an option for AT&T's Software Defined Network (SDN), a service that has been used primarily for voice and low-speed data traffic. AT&T disclosed last week that there are more than 500 SDN customers to date.

"By using our technology base and our strong relationship with sophisticated customers, we intend to close the gap between private line and other data offerings," said Frank Ianna, AT&T director of outbound business services.

SDDN will enable customers to establish data connections over AT&T's Worldwide Intelligent Network and can be used for bulk data transfer, local-area network interconnection and video teleconferencing, according to AT&T. AT&T filed its SDDN tariff last week.

"Basically, folks built large private networks for two reasons: cost and quality," said Mary A. Johnston at Northeast Consulting Resources, Inc. "What's happened over the last eight years is the public networks have gotten pretty good . . . and it is giving the private solution a run for its money."

Traditional private networks, Johnston noted, will still be needed for security-sensitive applications and for those users requiring T3 transmission lines. "But there will be a much smaller private infrastructure," she concluded.

Coming attractions

AT&T's SDDN will be available at 56K bit/sec. in July. AT&T will introduce in-band signaling and "clear channel" versions of 64K bit/sec. service on Oct. 3, with general availability slated for December. A 384K bit/sec. offering will be launched in the first quarter of next year, said AT&T, which only two weeks ago announced a switched, 384K bit/sec. option for its Accunet private-line customers (see story page 62).

The basic rate for the 56K bit/sec. SDDN for on-net calls ranges from 9.5 cents to 22 cents per minute, Ianna said.

NCR Corp. will be a beta-test site customer for SDDN, AT&T announced. The Dayton, Ohio, computer company was one of AT&T's first and largest SDN sites: In 1986, it converted 150 locations and 800 circuits from its leased-line private network to SDN. The 170-node SDN, which handles approximately 3.5 million minutes per month, now carries all the company's voice traffic.

"We are looking seriously at videoconferencing applications," said Fred L. Davidson, director of corporate telecomputing services at NCR's corporate information systems and services group.

The videoconferencing application will be rolled out in the fourth quarter, said NCR officials, who also said NCR will look to use SDDN as a way to interconnect some of the 4M byte/sec. token-ring networks scattered throughout NCR's local facilities around the U.S.

In a related announcement last week, AT&T said that by June 1, its ISDN Primary Rate Interface service will be available in 322 U.S. locations. By the end of the year, Integrated Services Digital Network will be available in 343 locations nationwide, AT&T said.

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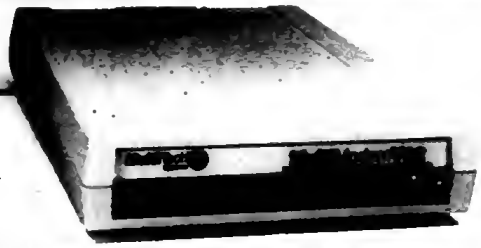

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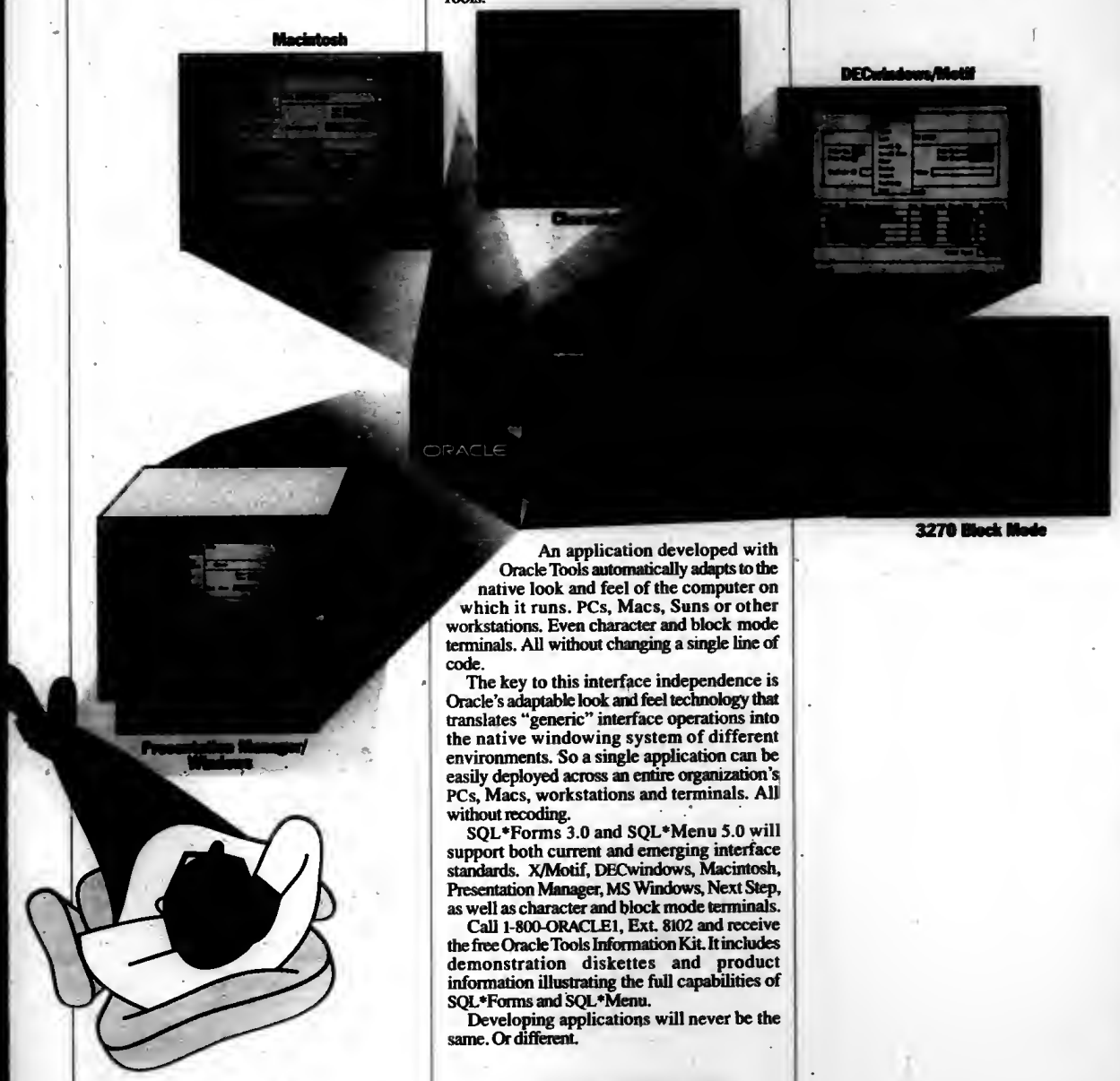

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Users take a peek at Must's 4GL tools

BY MAURA J. HARRINGTON
CW STAFF

NASHVILLE — Moving with the strategy of using its fourth-generation language as the front end for database systems over multiple platforms, Must Software International allowed users last week to critique its newest 4GL-based products, which are still under development.

The products under open review at the Sixth Annual Nomad International Users Conference, held here last week, were the Nomad Tools Kit and Nomad Version 3.0, which were designed to run on IBM Personal Computers and compatibles, OS/2 and Digital Equipment Corp.'s VAX/VMS machines.

Nomad Version 3.0, running on OS/2, was designed to let its 4GL serve as the front end of an SQL database server for Gupta Technologies, Inc.'a SQLbase and Microsoft Corp.'s SQL Server, the company said. It was also designed to support DEC's RDB through peer-to-peer local-area networks and is compliant with IBM's Systems Application Architecture (SAA), said Must President Jean-Luc Badault. "To be strategic in the 1990s, a company must be able to offer their product on three tiers: mainframes, midrange systems and PCs," said Badault, adding that by the end of the third quarter, Must will have accomplished this task.

In the more distant future, Badault said, Nomad's capabilities will include the ability to port its products to other platforms such as Oracle Systems Corp.'s Oracle database.

Must'a Nomad Toolkit, expected to be released by the end of September, was designed to allow PC-DOS and OS/2 users to create their own Nomad-based programs — without having to know the 4GL — through the use of graphical user interfaces. Features for Nomad Toolkit include a Schema generator for data definition, a default and customized form generator and an update-code generator, the company said.

"The underlying language of Nomad is very relational, rather than hierarchical. . . . There is a strong synergy between Nomad and the emerging relational database management market," said Bill McNee, analyst and product director at Gartner Group, Inc., a market research firm in Stamford, Conn.

Nomad users, who are encouraged to suggest changes in a product under development, said they are pleased with the way the Nomad product line is compliant with other vendors' information systems strategies, such as SAA.

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Bull hops into speedy Unix fray

BY MARYFRAN JOHNSON
CW STAFF

BILLERICA, Mass. — In the leapfrog power wars among workstation vendors, Bull HN Information Systems, Inc. joined the fastest toads on the block last week by introducing four Unix-based systems, ranging in price from $6,000 to $600,000.

The most powerful of the new workstations in the DPX/2 line is the Model 510, Bull's first computer to use reduced instruction set computing technology. Based on Mips Computer Systems, Inc.'s R/6010 chip, the Model 510 can operate at 68 million instructions per second and support more than 500 simultaneous users. It is the first system to emerge from a joint agreement between Bull and Mips in October 1989 and is priced at $170,000 to $600,000, depending on memory and disk capacities.

Company officials also claimed their DPX/2 Model 360 is the industry's first multiprocessor, multiuser system based on Motorola, Inc.'a 68040 chip. The Model 360, priced at $36,000 to $300,000, was a cooperative design effort between Motorola engineers in Austin, Texas, and Bull teams from Italy, France and the U.S.

"One thing particularly striking about Bull's approach is they sat down and decided to work with CPU chip vendors soon after the start of the design cycle in order to get the advantage in speed-to-market," said Wayne Kernochan, a senior analyst at The Yankee Group in Boston.

The DPX/2 product line now includes Unix models based on three different chips: Intel Corp.'s 80386, Motorola's 68030 and 68040 and Mips' R/6010. Since the systems are all binary compatible, company officials said applications software can be migrated by recompiling rather than rewriting.

The machines based on Motorola's 68040 and Mips' R/6010 will reportedly be available next October. The Unix systems are all field-upgradable and run under the Bull Open Software environment.

The other two processors introduced last week are the DPX/2 Model 220, based on the 68030 chip and priced from $11,000 to $35,000, and the entry-level DPX/2 Model 110, based on a design from its Zenith Data Systems subsidiary that uses a 386 chip and is priced from $6,000 to $10,000.

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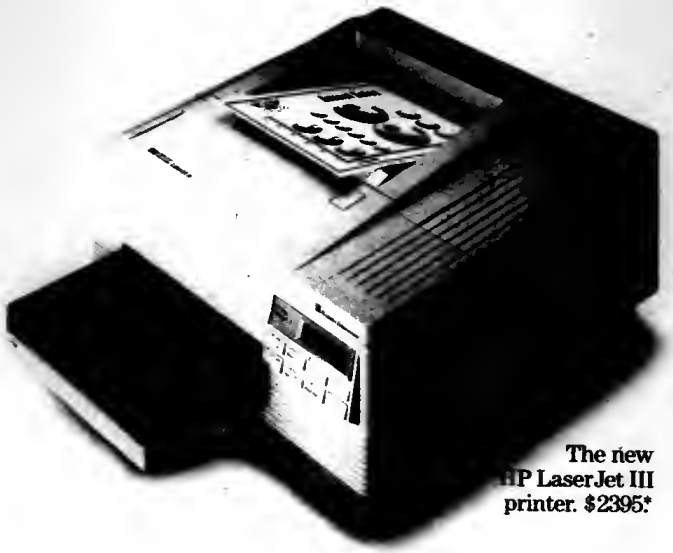

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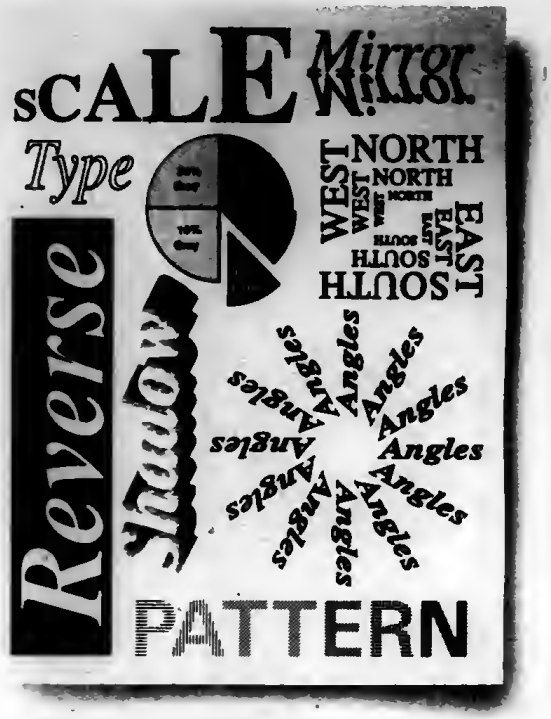

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Keeping track of the Earth's health

Storage method for massive files of environmental data aids greenhouse-effect researchers

Editor's note: The second annual Computerworld Smithsonian Awards, *recognizing individuals and organizations that have achieved outstanding progress for society through the use of information technology, will be awarded in a ceremony to be held June 25 in Washington, D.C. This week,* Computerworld *profiles one of the finalists in the category of Environment, Energy and Agriculture.*

BY CLINTON WILDER
CW STAFF

BOULDER, Colo. — One of the most controversial environmental issues of the 1990s is also one of the most data-intensive.

Scientific conclusions about global warming — the so-called greenhouse effect — depend on huge amounts of information. Mathematical ecosystem models on supercomputers, using data gathered from research satellites, can generate files as large as 200M bytes. At the National Center for Atmospheric Research (NCAR), the average file is 25M bytes — 10 times larger than a typical supercomputer file.

NCAR's data storehouse now exceeds 12 terabytes — roughly equivalent to 12 million paperback novels. More than 400,000 files are stored on some 73,000 tape cartridges, occupying 1,600 sq ft of floor space. The information includes meteorological observations from oceangoing ships as far back as 1854.

NCAR has earned a *Computerworld Smithsonian Award* nomination for designing a data storage system that greatly enhances the ability of greenhouse-effect researchers to access and move these huge files.

NCAR developed a "fast-path" file handling system for its Cray Research, Inc. supercomputers that essentially bypasses transfer points in a typical supercomputer file system. Users of the Cray X-MP/48 and Y-MP/864 can directly access files in NCAR's mass-storage controller. By contrast, in a typical configuration, the controller sends files to a network node, then to the supercomputer.

This system is made possible by an electronic file directory on the controller that creates a hierarchy of files. The fast-path affords the fastest access to the most frequently used files, which are stored on disk if smaller than 30M bytes and on tape cartridges in a Storage Technology Corp. 4400 Automatic Cartridge System if larger than 30M bytes.

Patricia Barry Levy

NCAR's Bill Buzbee *needed a way to handle huge files of environmental data*

Better ability to manipulate massive files will be increasingly critical to climate change research, said Bill Buzbee, NCAR's director of scientific computing. "There are two things we need to improve our ability to simulate the climate: more observational data and a lot more computer power to do the simulations," Buzbee said. "That means we need more capability to handle the data being computed."

That mass of information will increase dramatically in the 1990s. By the end of the decade, NCAR's planned observational satellites will generate three terabytes of research data — including temperature readings, radiation wavelength measures and carbon dioxide levels — every day.

This data will be plugged into increasingly complex and sophisticated mathematical models running on the Cray computers. Each simulation must be stored, Buzbee said, so that researchers can run the same data later with different assumptions about climate changes.

The NCAR system is used by 1,250 researchers — 500 at NCAR and 750 in universities across the U.S.

"We must understand the physics of the global environmental system better," Buzbee said. "That's pure basic research." Research that's getting a big helping hand from information technology.

And the nominees are. . .

Four other organizations have been nominated for the second annual *Computerworld Smithsonian Awards* in the Environment, Energy and Agriculture category. They are the following:

- The U.S. Bureau of Land Management and the State of Alaska Fire Service in Fort Wainwright, Alaska, were nominated for a forest fire detection and dispatch system utilizing lightning detectors, microwave communications and a host computer.
- Environmental Systems Research Institute in Redlands, Calif., was nominated for ARC/INFO, a geographic software system combining map data with demographic statistics.
- The U.S. Environmental Protection Agency in Washington, D.C., earned a nomination for its personal computer-based system for studying the effects and causes of acid rain.
- Unocal Corp. in Brea, Calif., was nominated for its system integrating advanced robotics, fiber-optic communications links, supercomputers and scientific workstations for more productive extraction of oil and gas.

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Chip makers head to court

BY JAMES DALY
CW STAFF

SAN JOSE, Calif. — Cypress Semiconductor Corp. has launched a $30 million suit against Silicon Valley chip maker Advanced Micro Devices, Inc., charging that Advanced Micro had attempted to corner the market on a key computer chip through a policy of "fraud, deceit, breach of contract and baseless litigation."

The move is the latest wrinkle in a lengthy legal tangle between the two companies that began in August 1988 when Advanced Micro filed a patent infringement suit against Cypress. In that action, Advanced Micro said that Cypress had infringed on certain Advanced Micro patents covering chips known as programmable logic devices, which are used in laptop computers.

Cypress has fought the charges, claiming it had gained license to a variety of the chip known as the 22V10 in a 1983 agreement between Cypress and Monolithic Memories, Inc., which was acquired by Advanced Micro in 1986. In any event, Cypress officials argued, the patents were later declared "nearly worthless" by the U.S. Patent and Trademark Office.

The Cypress countersuit claims that Advanced Micro's acquisition of Monolithic Memories was part of a scheme to corner the market on the chip, in violation of federal and state antitrust laws.

The countersuit represents a first for Cypress Chief Executive Officer T.J. Rogers, who has publicly argued that lawsuits are counterproductive to U.S. industry. However, Rogers said that he became frustrated after negotiating with several Advanced Micro executives and assorted legal teams. "It's unfortunate that we have to file this," Rogers said, "but we continue to be met with deaf ears."

A spokesman from Sunnyvale, Calif.-based Advanced Micro said that Rogers had refused to accept settlement terms that were offered and characterized the Cypress claims as "bizarre."

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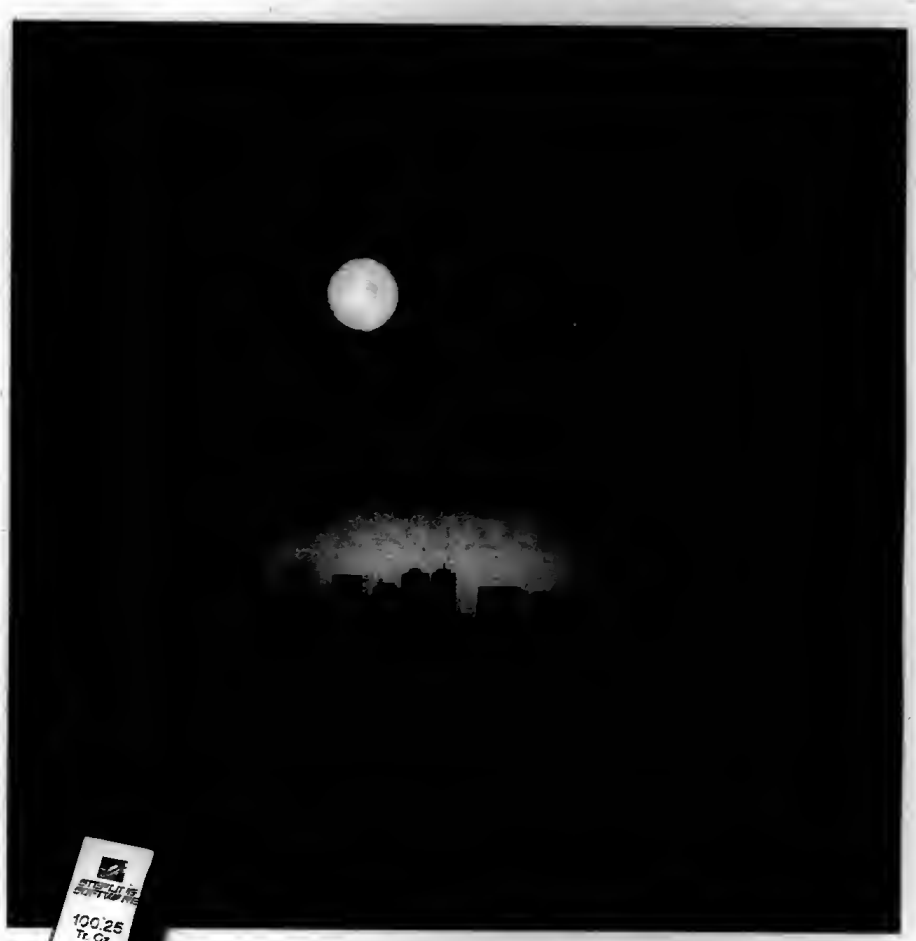

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ADVANCED TECHNOLOGY

TECH TALK

Bilingual bills

■ Money talks, as anyone who has it can tell you. The Bank of Canada has released $2, $5 and $10 bills that actually talk aloud. The currency, a result of a joint effort between a university and an electronics firm based in Ottawa, was developed for the visually impaired. The system is based on a pocket-size electronic reader that recognizes each bill's patterns and speaks its denomination in either French or English. Field trials are still under way, and a price for the reader still remains to be set, although it will probably be modest, according to the bank.

Facing up to computers

■ Picking out faces in a crowd is difficult for most people, but there is a company in Milpitas, Calif., that said it will introduce a computer capable of doing just that. International Imaging Systems plans to have on the market later this year a computer and video camera system capable of recognizing faces. The system, which uses neural networking technology, will be used at airports in an effort to spot known terrorists in crowds. The computer recognizes people by comparing mathematical expressions containing up to 256 ratios of facial features, such as the length of a person's face to its width, stored in memory with an image captured by the video camera.

Do-it-yourself chips

■ Plessey Semiconductors is shipping what it said is the world's first intelligent, user-customized, remote-programmable silicon chip. The chip can be programmed to independently change its wiring, allowing the chip to correct problems and adapt to different demands. Using a PC, it can be programmed in hours rather than weeks. Called the ERA, short for electrically reconfigurable array, Plessey's chip is unusual because it can be rewired in less than .001 sec. while the chip is operating.

Moving beyond the basic blueprint

Architectural animation helps designers bring plans to life, without brick or wood

BY MICHAEL ALEXANDER
CW STAFF

If a picture is worth a thousand words, how much are 1,800 pictures worth? To an architectural or engineering firm, that many pictures could be worth a lot of new business, especially if they are animated.

Computer-aided design (CAD) has radically improved the way in which most architectural and engineering firms design buildings and other structures. Now, those same firms are banking on using computers not only to render designs with lifelike clarity but also to animate them.

Computer animation in building design and construction is still a relatively new idea, according to John LoVerde, vice-president of The Corrigan LoVerde Group, a New York firm that specializes in creating computer graphics for architects and engineers.

"Computer animation is at the same stage that computer-aided design was 10 years ago, when firms were just beginning to become aware of the technology," LoVerde said.

The computer creates 60- to 180-second computer-animated programs that enable clients to visually "walk" through a proposed structure and get a sense of what it will actually look like once it has been built. The computer-generated pictures are transferred to videotape.

Corrigan LoVerde *enhances building designs with animated action*

The company creates productions starting with the client's blueprints or computer model generated with a CAD package on a Tektronix, Inc. XD88 workstation. The XD88 runs Dynamic Imaging System, a rendering and animation package developed by Wavefront Technologies.

"We sit with a developer, for example, and talk about the specific materials that will be included in the video," LoVerde said. "We look at the actual materials that will be used, including samples of marble, wood paneling, color samples — the nitty-gritty stuff — and we apply it to the three-dimensional model."

There are two approval steps consisting of snapshots at different stages in the production to ensure that the final video has both the visual quality and motion path that the client wants.

"Then we crank up the computers for a few days," LoVerde said, It takes about four days for a workstation to generate the thousands of images required to create a full-motion video, which runs at 30 frames per second. Narration, music, titles and other special effects are added by a video post-production firm.

The length of video varies from 60 to 120 seconds. Depending on the complexity of computer model, animation and rendered images, a production costs anywhere from $10,000 to $20,000, LoVerde said.

Smart cards still fighting an uphill battle

BY MICHAEL ALEXANDER
CW STAFF

Smart-card proponents have said repeatedly that exciting applications using the technology would arrive soon. The problem is that "any day" has stretched into years, and widespread use of smart cards remains years away.

A smart card is about the same size and shape as an ordinary credit card. A penny-size microprocessor is embedded in the card and is typically capable of storing 16K bits of data, although there are some that can store up to 64K bits. In Europe, where the technology has been a big hit, the cards are used by consumers to conduct banking transactions, make telephone calls — even pay parking meter fees. In the U.S., however, such applications are nowhere in sight.

"It may be that people are not looking in the right place," said Ben Miller, editor of "Personal Identification News," a newsletter that tracks smart-card and biometrics security technologies. The engine that will drive smart-card technology is a heightened awareness of computer security, Miller said.

Smart cards could be programmed to be both dynamic password generators and cryptographic keys for only $10 or so per card, far less than alternative technologies such as tokens, Miller said. The expense could be more readily justified if the card's "real estate" could be shared by several departments, he added.

Years away

Large-scale applications of smart-card technology, such as consumer banking and telephone call charging, are several years away, mainly because of the prevailing use of magnetic stripe cards in automated teller machines, telephones and many other places, said Peter Ognibene, vice-president of Applied Systems Institute, Inc., a Washington, D.C., firm that develops smart-card applications.

"The sunk costs of that infrastructure is the great China Wall that we are dealing with," Ognibene said. "If we were starting a bank card system from scratch, there isn't a banker who would go with magnetic stripe cards for automatic teller machines. Now, there is little pressing need to change."

Perhaps ironically, Bank South Corp., headquartered in Atlanta, is one of the few U.S. companies using smart cards in a six-week test of an employee time accounting system. The cards have been issued to 150 hourly employees in five different operations of the bank in a bid to see if the cards can help shave the costs of tracking the working hours of each employee.

"The card will be loaded with data: the employee's name, social security number, date of employment, time schedule, work schedule and profit center," said Michael Lewis, vice-president of human resources. "This person will plug the card into a reader, which is tied to a PC, when they punch in and punch out. The data will be held in the terminal and, at the manager's discretion, uploaded to a network server and then to a mainframe."

Within 12 to 18 months, the cards will be programmed to store biometrics and other data for physical security and flexible benefits information.

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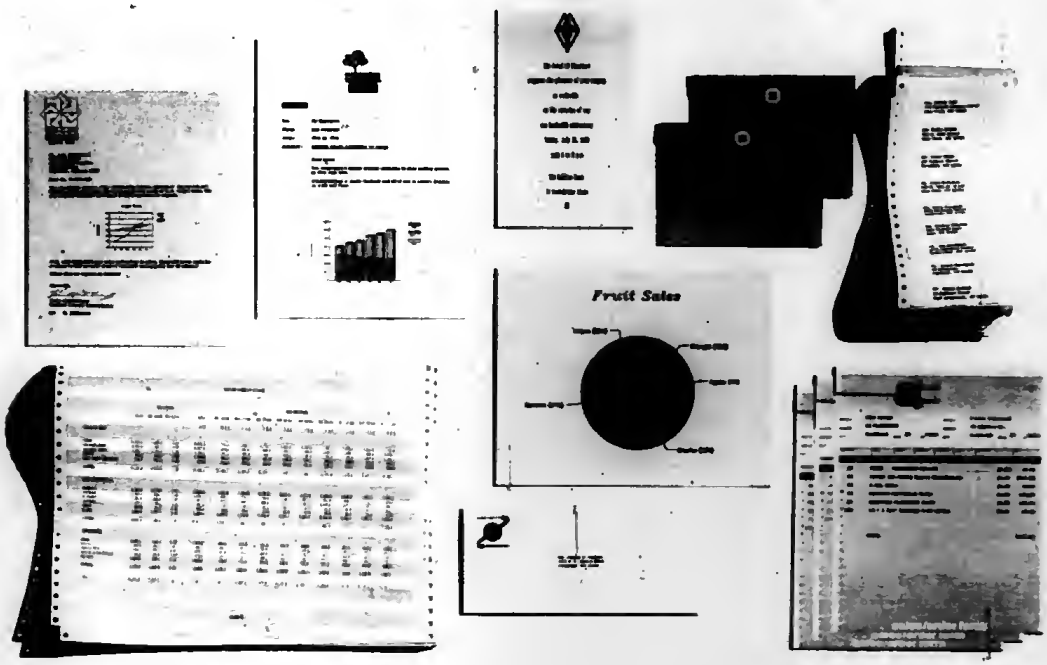

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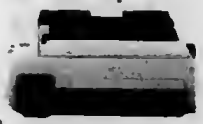

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EDITORIAL

Left at the altar

IT HAS ALL the ingredients of a classic soap opera as well as the schmaltzy air of a country and western "my old lady done me wrong" ballad. For good measure, throw in the imagery of a jilted Humphrey Bogart standing in the rain at the Paris train station while reading the fast-blurring letter of his runaway lover as the boom of enemy guns provides the background.

Specifically, the stage is set like this: Two lovers decide to wed in what will be the social event of the year. The betrothal announcement is greeted with excitement and anticipation. The lovers rendezvous in front of eager photogs and pronounce that their union will be a marriage of equals — and that together they will overcome the adversity of the world.

The wedding date approaches and the groom sojourns to a holiday spa to relax before the event. Unbeknownst to him, the parents of the would-be bride are plotting to quash the marriage. He just ain't good enough for our daughter, they determine. Not only that, reports surface that the bride-to-be tried to romance the groom's own brother on the eve of the engagement!

Then comes the shock of disclosure. Novell will not merge with Lotus. Customers will have to wait for all those benefits they were told the union would create for them. The Microsoft guns boom a little louder. And somewhere, hot Irish blues balladeer Sinead O'Connor is dedicating her next release to Lotus Chief Executive Officer Jim Manzi.

All right, so maybe there aren't a lot of you with wet eyes. But you have to admit that the nixed Lotus/Novell merger is perfect fodder for a miniseries.

If there is one lesson to be learned from this melodrama, it is that one should never underestimate the volatility of the industry today. The sense behind the merger was broadly viewed and agreed upon by executives in both companies and generally seconded by industry watchers. The thousands of customers of both firms optimistically anticipated the fruits of the merger between the leading personal computer applications company and the leading PC local-area network vendor.

But it was the "invisible men" in the smoke-filled back rooms — the institutional investors who collectively own controlling interest in many U.S. companies — that submarined the deal, notwithstanding the mutual benefits that the companies and their customers may have derived.

The collapse of the deal, coinciding with the release of Windows 3.0, leaves Microsoft stronger than ever. Microsoft and Lotus are heated rivals. Novell and Microsoft haven't exactly been cordial over the years, either. And there might not be anyone in the business who manifests the shark ethic (you know, eat the wounded) better than Microsoft founder Bill Gates.

LETTERS TO THE EDITOR

Poor execution

We agree with the premise of your CASE user survey [CW, April 9], but we take serious issue with its execution.

First, your survey did not directly address the central concerns of computer-aided software engineering: improving productivity, systems quality, and communications between designers and end users. The product features cited in your study are, in fact, means to the greater goals of CASE, but are not ends in themselves.

Yes, Index Technology's Excelerator was deemed No. 1 in productivity, but your survey did not ask how effectively each of the four CASE tools addresses overall quality and assists in communications. CASE is not concerned with delivering a set of product features, but with improving the entire development process. Your survey did not reflect this larger picture.

In addition, your sample size was too small, at least for users of Excelerator. We have installed more than 20,000 products at some 2,000 customer sites. Fifty-three respondents is not a valid representation of our user community.

Also, you accepted vendor-approved users for one of the surveyed products. Most researchers would consider that an invalid "sample" as well. And the survey size for a third product was considerably smaller than the others, skewing the outcome for that product, too.

Finally, your study should have better identified whether the respondents were committed customers or trial users of these products. The real authorities on CASE effectiveness are users who have taken the technology through the life cycle of an actual development project, thus penetrating the product's surface functionality. We question whether your readers would seriously regard the opinions of users only in the evaluation phase.

Dr. Fred L. Luconi
President and
Chief Operating Officer
Index Technology Corp.
Cambridge, Mass.

CISC vs. RISC

The question of RISC's ability to impact a corporation's long-term technological and financial investments has been answered very aggressively by the business community. In fact, this matter could be of very critical importance for corporations that have not explored the RISC workstation market. With high-powered systems rolling out at more than twice the rate of last year, a glance at the present $4 billion RISC market clearly illustrates that companies have not been reluctant to take the "RISC" after all.

But does this wrap up the CISC vs. RISC issue that has energized in the past couple of years? Not quite. If performance is the issue, I486 and 68040 chips have demonstrated quite a muscle, with performance reaching RISC levels in some cases.

Also, the I486 chip has adopted RISC technology to some extent in its design. If this holds, then quite possibly the line that has kept CISC and RISC apart will blur to the extent of giving birth to a "regular" instruction set computer.

Wasim E. Rajput
Computer Aid, Inc.
Allentown, Pa.

The write stuff

Michael Alexander's article on erasable optical discs [CW, April 9] takes its readers down an erroneous path. They will discover that rewritable technology will fall short of flexibility and reliability in their applications.

What their discovery will lead to is a realization that one optical technology is not better than the other — and that, in fact, both write-once and erasable drives will be needed and used.

There are a number of key applications that require that the stored data be permanently retained. This will be necessary, even if the user elects to later update or replace the data.

The write-once disk allows people to update or revise files by writing new physical records that logically replace existing ones. With write-once media, earlier versions of updated or deleted files remain on the disk.

There is a very strong future for erasable optical, but there is just as strong a future for write-once optical. MIS managers, as well as system planners and integrators, have to determine their real goals and requirements and then select the optical technologies that meet those goals and requirements.

Dave Kalstrom
Vice-President of Marketing
Plasmon Data Systems
San Jose, Calif.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax: (508) 875-8931; MCI Mail: COMPUTERWORLD.*

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Taking on the Japan challenge

AMIEL KORNEL

The U.S. has finally decided to end the rhetorical wrangling and get serious about doing business in Japan.

The divas of protectionism were no doubt flustered by the Bush administration's April 30 decision to drop Japan from its list of unfair traders. Complaints emanating from Washington corridors and Silicon Valley boardrooms became increasingly shrill during the past two years as U.S. bureaucrats and businessmen fretted over gaining access to lucrative Japanese markets.

Japan was labeled an unfair trader last year, along with India and Brazil, under the so-called Super 301 provision of the 1988 trade act. The administration, with Trade Representative Carla Hills in the lead, has now indicated that the playing field is now about as level as it is likely to get.

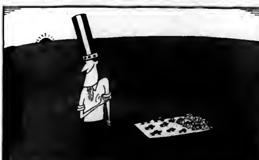
The Structural Impediments Initiative that framed the U.S. negotiating position during the past year apparently has led to Japanese concessions regarding imports of telecommunications equipment, satellites and supercomputers.

Only two weeks after the administration's move, U.S. computer vendors adopted a more conciliatory posture toward Japanese trade. In recommendations issued May 14, the Computer Systems Policy Project, a coalition representing 11 of the largest U.S. computer companies, called for the government to show greater flexibility in evaluating market access and dumping charges.

The group includes IBM; Apple Computer, Inc.; Compaq Computer Corp.; Control Data Corp.; Cray Research, Inc.; Digital Equipment Corp.; Hewlett-Packard Co.; NCR Corp.; Sun Microsystems, Inc.; Tandem Computers, Inc.; and Unisys Corp.

Several of the members have expanding businesses in Japan and would prefer, no doubt, to avoid antagonizing their hosts. Also, many computer vendors still have painful memories of the sharp rise in chip prices following the 1986 U.S. semiconductor trade agreement with Japan. Protectionism, they learned, has its pitfalls.

Hopefully, the new detente in trade will spur more U.S. businesses to face up to the many challenges of competing in one of the world's most demanding markets. The rewards could be great.



A recent trip to Japan indicated that businesses there are eager to buy information systems — irrespective of origin — that can make their companies more competitive. They scoff at suggestions that policies of the Ministry of International Trade and Industry could determine their buying decisions, saying that government bureaucrats understand little about the day-to-day needs of IS users. Their overriding concern is to stay afloat in the rough-and-tumble global marketplace of the 1990s.

Dozens of IS professionals from almost every major industry besieged me with questions about how their U.S. counterparts deal with cost control.

As a result of these concerns, the parochial and protective buying patterns that seem to have characterized Japanese procurement in the past are on the wane.

Computer vendors and users alike agreed that, in terms of IS, Japan has entered a multivendor era. Yet, domestic suppliers have refused to move away from a world of mainframes and proprietary products. This creates a phenomenal opportunity for U.S. firms to improve penetration into the world's second-largest computer market.

Many users are already turning to U.S. companies such as Sun, Hewlett-Packard's Apollo Division, Tandem, IBM and DEC for midrange systems and engineering workstations that their own national vendors have been slow to offer.

If U.S. companies wish to preserve their lead in these markets, they must overcome their penchant for proprietary systems. Japanese IS users see open architectures and standard operating systems as the key to boosting their companies' competitive strength.

Time is of the essence. Japan's consumer electronics companies have already begun offering low-priced personal computers and workstations running MS-DOS and Unix. U.S. high-tech companies should stop whining and start providing products and services that Japanese customers require.

Japanese buyers' insistence on product reliability and high-quality service creates an environment in which U.S. companies could hone their competitiveness.

IBM Asia-Pacific President Ed Lucente is on record as saying that the biggest U.S. computer vendor sees the ability to compete successfully in Japan as a litmus test of its worldwide strength.

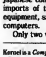
With the quarrel between Tokyo and Washington, D.C., toned down, U.S. computer companies should redouble their efforts in Japan.

If they don't act aggressively to meet the growing needs of Japanese businesses, Japan's own computer behemoths will eventually step in and — once again — sew up the market for themselves.

Kornel is a Computerworld *senior editor, features.*

Pumping PCs, or the IS route to fun and fitness

MICHAEL COHN



Look, I'm as health-conscious as the next guy, but I'm not one to walk away when the boss brings in donuts. And occasionally, I grab a pizza before noon — but I'm always careful to save room for lunch. Is it a crime to sneak a Snickers bar at around 3:00 or 3:30? Or both?

Like most career-minded folks, I can't seem to stay in shape. I eat too much. I'm too busy. I'm too tired. It's enough just climbing the corporate ladder every day, let alone while dragging love handles the size of IBM PCjr's.

High-tech and fitness don't mix. Maybe stockbrokers have time for squash, tennis and all that other stuff that requires showers. But we IS folks do something more important in our spare time. It's called traffic. Between commuting and computing, our calories remain undisturbed. Someone should come up with "car aerobics" or something. I once suggested car aerobics to a date, but she slapped me with the sesame-seed side of a Big Mac.

Should we just learn to live with cellulite? Will we ever squeeze into our Bugle Boys again? Fear not. There's fitness afoot, right here in the office! You can be cardiovascular in your cubicle! Consider the following exercises: nine-to-five fitness tips for data processing professionals.

Printout carrying

Ever tie up a printer running 20,000 pages of error messages? Or run a report that weighs more than your boss? Most folks would dash to the computer room and dispose of the evidence. But not you! This is the perfect opportunity to practice office fitness. Lug that stack back to your desk! Take the stairs and work up a little steam! Or better yet, take one page at a time and make 20,000 trips.

Whatever you do, don't just find a chair with rollers, load it up with a two-foot stack and wheel the whole thing back to the office. Not only do you miss out on office fitness, but the guy in the chair at the time might be ticked.

Vending-machine shaking

This exercise is not limited to IS professionals, but Baby Ruths can pick us out of a crowd. They wait until we've inserted the required mega-change and then cunningly cling to the machine's internal organs by a wrapper corner or month-old strand of vending-machine serviceman's hair.

Fitness-conscious computer pros should take this opportunity to shake the machine. This provides an excellent workout, especially because vending-machines have a 600-pound weight at the bottom. This ensures that you work up a nice sweat but still remain Baby Ruthless. The only way the machine will move is if it breaks through the floor and crushes the receptionist at the desk below.

Paperhole-strip tearing

In the old days, girls liked guys who ripped phone books in half. I guess it was pretty macho, or maybe it made it easy to stuff Yellow Pages in a pocketbook. Whatever the case, no one rips phone books anymore, unless they are talking to the Sprint operator while using an MCI Credit Card on an AT&T airport pay phone.

Today, to test their strength, people try to rip those little strips of holes that come on both sides of printer paper. It's very uncool to take a sixty-page memorandum and rip off those strips one page at a time. You've got to do the whole stack at once and really flex your muscles. This is an excellent strength exercise, and it's a good idea to do two or three repetitions — especially when you miss those darn perforations, destroy page 37 and then have to print the whole thing again.

Wastebasketball

By itself, wastebasketball is not much of a workout. You don't really burn up the calories unless you crash the boards going after every rebound. But with a little creativity, wastebasketball can be the first step towards sweating through your dry cleaning.

Try dribbling. Not just wads of paper, either; a half-filled styrofoam coffee cup is a real challenge to bounce across the office. Long shots can strengthen those wrists, especially when you are launching a stapler or rotary-dial phone. And don't be afraid to go all out and play tough man-to-man defense, unless the guy you are covering is standing behind the three-point line with a pair of scissors.

Response time aerobics

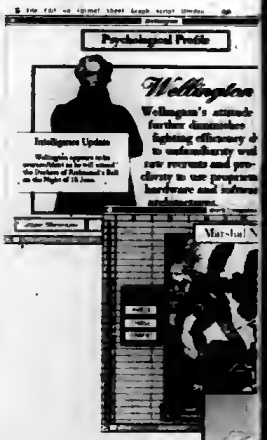
Studies show that 60% of programmers' time is spent waiting for the system to return after hitting Enter. In fact, programmers become more time-efficient by hitting Enter less and less, and eventually maximize productivity by avoiding the terminal altogether and watching pro wrestling at home.

Put that response time to good use! If you're waiting longer than five minutes, place both feet flat on the floor and stretch-out those hamstrings. After ten minutes, place both elbows on the keyboard and limber up your lower back. And if you're still waiting after fifteen minutes, place both hands on the terminal and push it off the desk.

Cohn is trying to be a computer salesman in Atlanta, Ga.

HOW NAPOLEON WON THE BATTLE OF WATERLOO.

NAPOLEON'S STAFF COMBINED THE WINGZ HYPERSCRIPT® PROGRAMMING LANGUAGE WITH DATALINK TO CREATE A CUSTOMIZED EXECUTIVE INFORMATION SYSTEM THAT LET HIM EASILY RETRIEVE SQL DATA BY CLICKING ON-SCREEN BUTTONS.



ON FEBRUARY 26, 1815, NAPOLEON BONAPARTE SET SAIL from his exile on the island of Elba. His mission was to return constitutional rule to an oppressed France, an idea that other European monarchs had vowed to fight to the death.

After landing at Antibes on March 1st, he set about preparing for war. A war that would culminate near the tiny Belgian village of Waterloo.

Napoleon knew that, to prevail, he would need to strike first. And he knew that such a tactic would require access to precise information. But, with limited resources and little time, a mainframe computer system was out of the question.

Then an aide alerted him to the ideal alternative. Open Systems information processing software from Informix. At the heart of the solution would be INFORMIX®-OnLine, the first mainframe replacement database management system.

EARLY MAPS INDICATE THAT THE FRENCH HELD A TREMENDOUS EDGE OVER THEIR ENEMIES. THE PERFORMANCE AND RELIABILITY OF INFORMIX®-ONLINE MAINFRAME REPLACEMENT SOFTWARE. AND WITH INFORMIX DATABASE SOFTWARE RUNNING ON VIRTUALLY EVERY UNIX SYSTEM, NAPOLEON WAS ABLE TO CHOOSE THE MOST COST-EFFECTIVE HARDWARE FOR EVERY LOCATION AND APPLICATION.

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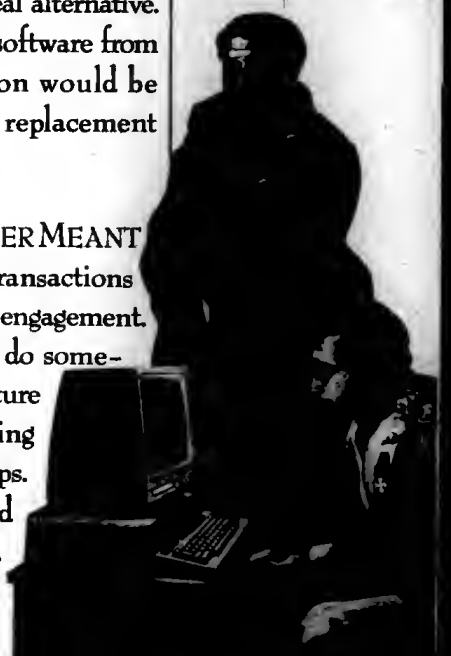
ONLINE'S DISTRIBUTED COMPUTING POWER MEANT Napoleon could process tens of thousands of transactions every minute, at outposts throughout the area of engagement.

But he soon learned that OnLine could do something no mainframe could. Its multimedia feature could store data in virtually any form. Including reconnaissance photos. Three dimensional maps. Multi-colored charts. Even clandestine sound recordings collected by his intelligence network.



Within three months, the French Commander had amassed an army of 120,000 men, supported by 246 pieces of artillery. The opposition would be a far greater allied force led by the Duke of Wellington.

But, while Wellington's staff struggled with traditional database systems that required experts and hours of work to generate reports, Napoleon's cadre had instant access to information through Wingz™ DataLink and INFORMIX-OnLine.

Historians acknowledge that this Executive Information System was perhaps the most formidable weapon in the French arsenal.

• • • •

ON THE EVENING OF JUNE 16th, NAPOLEON led his army across the Sambre River into Belgium, established headquarters at Beaumont and began his analysis.

As early reports came in, his strategic responses were transmitted to the field.

• • • •

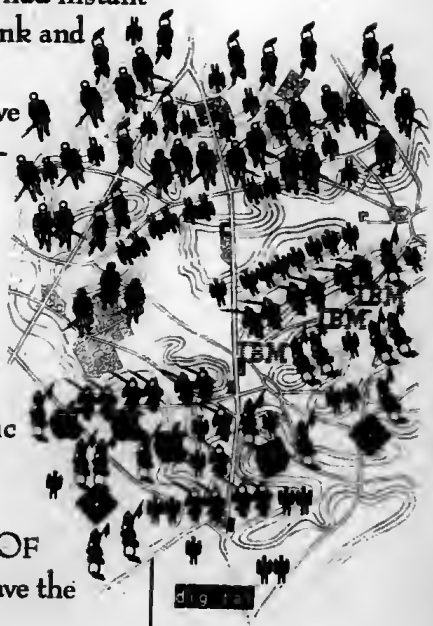
AT ELEVEN O'CLOCK ON THE MORNING OF the 18th, Napoleon rose from a brief nap and gave the order for his guns to blaze.

Less than two hours into the fighting, more than 300,000 men were engaged in hand-to-hand combat.

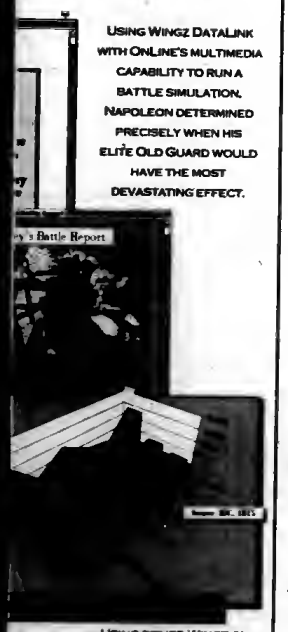
The key moment came just before dusk. Napoleon used Wingz DataLink and OnLine to run a simulation projecting Wellington's casualty rate and delivered the coup de grâce.

The order went out to let loose five batallions of his elite Old Guard. Charging into the fray, they crushed what remained of the enemy's resolve.

Looking out over the victorious ranks, Napoleon raised a glass of his most precious cognac and uttered the now-famous words, "What a glorious day for France."



THE LOYALTY OF NAPOLEON'S STAFF DID NOT EXTEND TO THEIR CHOICE OF HARDWARE. COMMANDERS SELECTED WORKSTATIONS FROM SUN, IBM, APPLE, HEWLETT-PACKARD, DATA GENERAL, DEC AND NEXT. FORTUNATELY WINGZ AND DATALINK SUPPORTED ALL MAJOR GRAPHICAL USER INTERFACES, FROM MACINTOSH, PRESENTATION MANAGER AND WINDOWS TO MOTIF, OPEN LOOK AND NEXTSTEP.



USING WINGZ DATALINK WITH ONLINE'S MULTIMEDIA CAPABILITY TO RUN A BATTLE SIMULATION, NAPOLEON DETERMINED PRECISELY WHEN HIS ELITE OLD GUARD WOULD HAVE THE MOST DEVASTATING EFFECT.

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SOFT TALK

Andrew Mohr

Feds are way out in front

When it comes to information systems, we usually think of the federal government as lagging behind corporate America. All too often, the government's cumbersome, lengthy procurements result in the delivery of hardware and software that are soon obsolete.

Not so, however, when it comes to the purchase of systems running Unix. Rather than bringing up the rear, the federal government has been way out front when it comes to choosing Unix.

The government's leadership in buying Unix systems stems from the nature of its procurement procedures. First and foremost, the government's own regulations require it to conduct advance planning of its computer procurements. In particular, it must consider system design, software conversion, expandability and interoperability before purchasing a system.

The government's advance planning is conducted at the management level. These managers, including IS professionals, tend to take a long-term view in choosing the type of system to procure.

Overall, the advance planning process tilts the government in favor of Unix over the available proprietary or personal computer alternatives. A key

Continued on page 37

When a DBMS doesn't relate

ANALYSIS

BY AMY CORTESE
SPECIAL TO CW

Twenty years ago, database management systems came along with the promise of revolutionizing the way companies use information by providing sophisticated methods of storing and retrieving data.

To a large extent, they have done that. However, a surprising number of firms have bucked the trend and continue to rely on file management systems that have been around since the 1960s.

Estimates vary, but the number of companies not using a DBMS ranges from 5% to 10% of IBM MVS sites to as much as 50% of IBM VSE and Digital Equipment Corp. VMS shops, market researchers said.

The reasons for not using a DBMS vary, but cost is typically high on the list. For Earl Harden, manager of systems and programming at Banc Boston Mortgage Corp. in Jacksonville, Fla., there are not enough compelling reasons to invest in a DBMS.

A self-proclaimed "true-Blue shop," running an IBM 3090 and a network of terminals and personal computers, Banc Boston has so far resisted moving from the large VSAM file system it currently uses to IBM's DB2 relational DBMS.

"To me, the relational model is a good way to reduce redundant data and tie multiple children to one parent," Harden said. For instance, in retail banking, everything can be tied to a customer number, the "children" being accounts, credit cards, loans and so on. As a banker in a mortgage firm, Harden contended that there is typically only one account per person: "I don't see a big need to go to relational design."

As further reason, Harden said the bank's major application vendor, Computer Power, Inc., does not use a DBMS. "It is better not to spend an exorbitant amount on a DBMS if your main bread-and-butter application is not using one," he said. Computer Power's mortgage banking software handles roughly 90% of the bank's business.

However, many application vendors are following the DBMS trend and reworking their packages around popular DBMS packages, particularly DB2 and other relational systems. As a result, analysts say non-DBMS-based applications may languish. Tony Percy, vice-president of software management strategies at market research firm Gartner Group, Inc., said software vendors will continue to support those applications, but there will be little new investment. "They will keep them current, but all development resources will go to relational implementations," he said.

Jeff Tash, president of Database Decisions, agreed. In the past, there was no one dominant DBMS vendor, so software developers based their applications on VSAM, he said. But today, if vendors are not developing for IBM databases, then they are at least assuming a base level of SQL, Tash said.

Analysts predict that many users not currently using a DBMS will eventually make the jump to relational. "It makes sense to organize around a relational DBMS," Percy said.

File management systems and early navigational database systems, such as those based on Codasyl, almost always cost less and in some cases may provide better performance than the latest relational systems. However, they do not offer the same functionality. Relational DBMSs and the more sophisticated navigational systems that emerged in the 1970s offer better recovery, integrity and security features as well as data independence, Tash said.

One company that is making the jump is BWD Automotive

Continued on page 37

FEATURE: IBM SOFTWARE PRICES

The price isn't right

BY PETER BURRIS
SPECIAL TO CW

Buying IBM software these days means digging a little deeper into your pockets. IBM's large-system software prices have been rising and will continue to do so at a 10% clip for the near term.

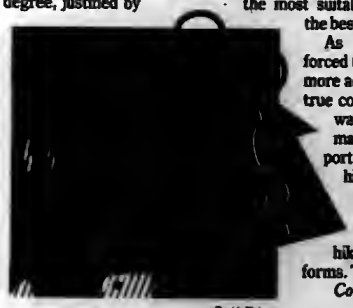
IBM's actions are, to a degree, justified by the economics of the computer business. System software development is one of the largest fixed costs in the large-systems computer industry, and IBM has invested thousands of man-years into its mainframe system software development.

Historically, such costs have been hidden in the high margins gained by selling hardware with bloated price tags. But competition from plug-compatible manufacturers (PCM) and the market for used machines as well as the increasing intrusion of microprocessor-based substitute technologies on traditional mainframe application areas has led to price pressure on such areas as 370 hardware. Users have enough market power today to shop for the most suitable technologies at the best prices.

As a result, IBM is forced to price software to more accurately reflect its true costs of system software development, marketing and support; it's not as easy to hide these costs in the hardware price anymore.

Those price hikes are taking three forms. The most obvious is

Continued on page 34



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Burris is director of International Data Corp.'s IBM Advisory service.

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Sneaker company makes tracks

L.A. Gear hungrily gobbles up hardware — and other firms' IS employees

ON SITE

BY J. A. SAVAGE
CW STAFF

ONTARIO, Calif. — You may know them for the rhinestones on their flamboyant sneakers, but information systems departments in Southern California's "inland empire" know them for hiring away their staffs, and vendors know them for buying profuse amounts of hardware as fast as possible.

L.A. Gear, Inc., maker of outrageous sneakers and flesh-flashing garments, has an IS department on the move, particularly when it comes to distributing its sports gear to hungry retailers.

Fleet feet has a double meaning at L.A. Gear's distribution unit. Not only does distribution's IS department favor the company's sneakers and stone-washed denim over pumps and wing tips, but the department is also speedy in building systems and staff.

Following the firm's 100% growth from 1988 to 1989, IS has grown from three employees to 23. During that time, distribution has graduated from Hewlett-Packard Co.'s HP 3000 Model 42 low-end minicomputer to two HP 3000 Model 935 reduced instruction set computing minicomputers last year.

L.A. Gear has since installed two HP 3000 Model 950s, and HP's highest-end HP 3000 Model 980s are on order, said Chris Simmons, director of distribution systems. Simmons is sold on using HP's minicomputers to avoid a mainframe environment.

"We'll be able not to have the cost of IBM. And anyway, if we joined Big Blue now, we'd be only one of a billion companies for them. HP is a partner in our plan," he said.

Company creed

"The philosophy here is that we'll buy the stuff when we can," said John Horwath, user services manager. "In a year, we might have a lull, and we don't want to be strapped for hardware."

The distribution center is filled with boxes of sneakers and miles of roller-coaster conveyor belts; little space is left for computer equipment. Adjacent office space has more than 100 personal computers and terminals networked on 12 Intel Corp. 80386-based servers from various vendors.

PCs are used primarily for office functions, while the HP minicomputers carry on the management of the distribution center. The network and the HP minicomputers, however, remain separate, with the hosts accessed only through a second serial port on some of the PCs.

L.A. Gear is waiting for HP software that will allow applications to be downloaded to PCs, where they will be run before being returned to the mini. Simmons said he expects that software sometime this year.

While spending money on hardware and software appears to be no problem, finding IS staff is, according to the department.

The advertising division has its pick of celebrities — San Francisco 49ers quarterback Joe Montana, former Los Angeles Lakers center Kareem Abdul-Jabbar and pop star Michael Jackson — to help it sell shoes. But IS has already raided the local computing stars in the "inland empire" — the area east of Los Angeles between the metropolitan area and the desert.

"Everything changes so quickly; we're trying to do so much. We have a hard time finding people. We stole all the good ones up front," Horwath said. Horwath said that the department is trying to hire at least three more employees.

"It's not difficult to shake out money for personnel," Simmons said. "It's just that every department is asking for 50 more people." Simmons said that IS personnel are needed to "maintain what we have," while the staff currently has 100 projects in the works for distribution.

Alex Lowman

L.A. Gear's Simmons *displays the firm's stock-in-trade*

Automation projects are made difficult because, unlike many suppliers, customers can order as few as four pairs of shoes, thus requiring more invoices, inventory management and security. For instance, one project will automate the handling of United Parcel Service packages, which are now weighed and routed by hand.

By July, the firm is set to have a distribution order processing system. If the package weight differs from what an attached invoice notes, the conveyor will stop for a manual check. If not, it will print out the UPS label and debit the shipper's account.

Simmons said IS keeps its flexibility due to a horizontal management structure and entrepreneurial nature. IS is run by an executive committee of five members that meets weekly in the firm's corporate offices. "We each have our areas of expertise, but we decide on direction together," Simmons said.

DEC opens door to expert help center

BY MARYFRAN JOHNSON
CW STAFF

MARLBORO, Mass. — Digital Equipment Corp. recently opened its first Supercomputing Technology Center, which company officials said will provide customers with expert help in cranking their applications up to supercomputer speed.

As both a sales tool and an educational aid, the center has already helped more than 200 customers and third-party software developers run software benchmark tests on the vector facility option for VAX 6000 midrange systems and mainframe VAX 9000s.

DEC also claimed a "performance breakthrough" after running industry-standard benchmark tests of its VAX 6000 vector processor, which began shipping this month.

The vector processor reportedly speeds up applications to nearly 200 times the speed at which they would run on the older VAX-11/780 systems. On a 6000 Model 400 system, the addition of a vector processor would multiply application speed by 25 times, DEC claimed.

By teaming its own engineers with customers and developers, DEC hopes to build the supply of vectorized applications available to engineering and scientific users. The firm said it plans to open another four supercomputer centers in Washington, D.C., Houston, Los Angeles and Sophia Antipolis, France.

"This is clearly an effort to help them sell VAX 6000s with vector facilities," said Terry Shannon, an analyst at International Data Corp. in Framingham, Mass. "But it could be an indicator that, despite adverse rumors about vector capability on the 9000, it does exist and DEC is confident it'll work."

DEC displayed its VAX 9000 vector facility at a DEC users' conference in New Orleans this month — another sign of confidence in the product, Shannon noted. "If they didn't have the wherewithal to do it, I doubt DEC would be creating such an exposure for itself," he said.

Vector processing holds special appeal for technical users whose applications have outgrown their computers, said Dennis Clark, a systems analyst at the Oak Ridge National Laboratory in Kingston, Tenn.

"At the national lab level, there are a number of users in that situation," Clark said. "It also happens in weather forecasting and with gas and oil companies."

Vector processing capabilities were announced in October 1989 for the mainframe and midrange lines. The vector option is supported by software languages and layered products, including VAX Fortran and Digital Extended Math Library.

The center is intended to complement the software development training available to customers and third-party vendors at DEC's Development Technology Center.

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Price

FROM PAGE 29

the nearly annual 10% or so increase in software prices that IBM has been heaping upon its 370 users for quite some time now.

The second is IBM's 2½-year-old graduated pricing scheme. Originally announced as a means of making 370 software more affordable in the midrange, today the schedule can be refined to partition users into "willingness-to-pay" segments. In this way, IBM can play with group pricing levels to gauge the user's price threshold, that is, the price the user can bear.

When the pricing scheme was first announced, there were four graduated pricing levels, with the largest 3090 systems falling into the Group 40 level. Today, 3090s have been spread across seven graduated pricing groups, with the top group being Group 60.

The third tactic, and the one that is most likely to generate the greatest monetary return for IBM, is its sbility to modularize highly related software functions into separate components that can be individually priced.

For example, Group 50 users of the most recent MVS/ESA version of CICS 2.1 can purchase IBM's teleprocessing monitor for $169,600. However, to get the Data Tsbles feature, which allows high-performance ESA functions to support performance-sensitive data such as control blocks and similar objects, companies must shell out another $36,840 — effectively bumping up the cost of a single installation of top-of-the-line CICS/ESA on a 3090 500-class machine by more than 20%.

By contrast, in Fall 1987, the most expensive basic onetime CICS price was $119,280.

PCM power

There are some very simple competitive reasons behind IBM's use of software to increase revenue per site. For the past 10 years or so, IBM has delivered more millions of instructions per second (MIPS) at better dollars approximately every 12 to 18 months. However, its pricing "flexibility" has been constrained by the success of PCMs like Amdahl Corp. and Hitachi Data Systems Corp.

As competition from the PCMs increased, IBM found its flexibility fleeting.

Availability, too, received boosts, as IBM rolled out such features as the dynamic channel subsystem, multiprocessor support for large physically partitionable systems and the Processor Resource Systems Manager. But here, too, PCMs, by exploiting newer electronic design, test and simulation tools, have proven adept at quickly responding to IBM's thrusts.

A case of control

No matter what 370 hardware companies purchase, in the 370 arena, IBM controls the vast majority of system software definitions.

IBM will exploit its system software control to help offset the contraction in the mainframe market. To increase its mainframe revenue, IBM has two strategies available to it:

- First, turn over the installed base as fast as possible and get companies to upgrade their machines. Performance and new software functions introduced with each successive family have been the carrots dangled before needy users.
- Second, compel customers to increase expenditures per site. Selling additional peripherals is s hardware means to this end. Making system software components modular is the software side of the strategy.

Moreover, by increasing the number of subsystems critical to maintaining "environmental compatibility" across 370 installations, as well as non-370 machines, IBM can effectively expand the portfolio of required programs.

Independent 370 software houses have faced the same business pressures as IBM: Without a rapidly expanding 3090-class installed base, there just are not as many new sales opportunities. Following IBM's lead, vendors such as Management Science America, Inc., Comshare, Inc. and Oracle Corp. have introduced graduated pricing structures of their own.

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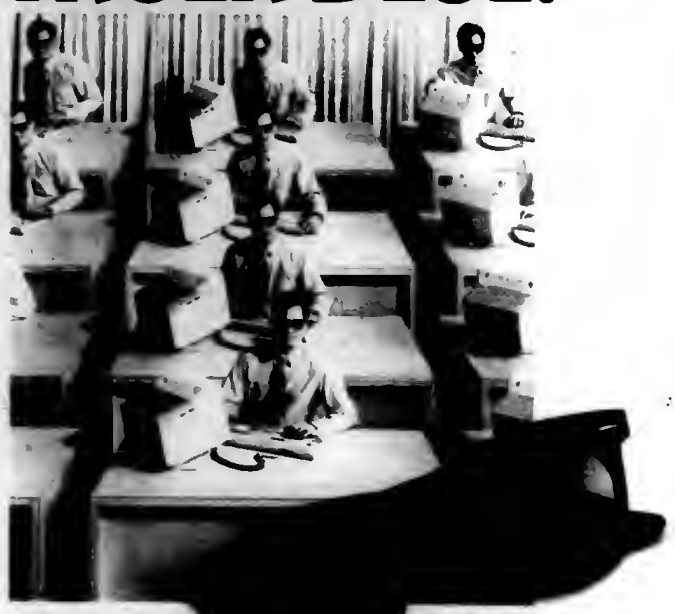

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Some, like Computer Associates International, Inc., have gone on buying sprees, gobbling up fellow independents. As with IBM, CA's strategy, simply put, is to increase the volume of its business per site. CA is expanding its presence into as many sites as possible and employing low-cost sales techniques such as telemarketing to funnel additional programs and utilities to acquired customers.

On the horizon

As a result of the competitive, business and economic conditions that are facing IBM's large-systems business, users can expect the following other circumstances:

- **Hardware prices will remain under pressure.** The dynamics of the mainframe business are unambiguous. Sources for MIPS are plentiful. Demand remains consistent. Competition is on the rise. Exit barriers are very high. Users will retain and increase their market power — the power to extract concessions from suppliers.
- **IBM's software pricing actions will continue to swell users' system software budgets.** Nearly annual 10% across-the-board price hikes will remain in vogue in 370-land probably for as long as the 370 holds down IBM's high end. Likewise, the graduated software pricing schedule will receive continuous adjustments as IBM attempts to walk the fine line of identifying willingness to pay. Finally, IBM will further modularize system software functions, pricing each individually. All of these tactics, however, are subject to the overriding need to compel users to remain in step with IBM's functional directions.
- **Market baskets will not go away.** To shore up system prices, IBM has adopted a "market basket" sales strategy, whereby software and service add-ons are discounted. Competitors, unable to offer the same ancillary incentives, are forced to compete on points — discounts on their list price — that more accurately represent hardware value.

As IBM moves toward Summit, market baskets will not only help generate revenue but also lower migration barriers and help homogenize the installed base of major software components.

- **Independent software vendors will strive to remain under IBM's umbrella.** The independents in the 370 market will choose carefully when, where and how to compete against Big Blue, while IBM will further exploit partnership opportunities. Those independents subscribing to IBM's strategic directions will receive some protection from the giant. Users should pay close attention to the general sales and marketing attitudes displayed by software suppliers: You can bet IBM is.
- **IBM will further position itself as an applications provider.** The one area in which IBM has enjoyed less-than-stellar success in the 370 software market is in the applications business. However, recent thrusts such as Cimadvantage made a full-scale assault on the software solutions market.

It's unlikely that IBM's year-to-year software revenue growth will remain in the 20% range — indeed, in 1989, it rose only 6.3%. IS organizations will have to keep a close eye on what the company will do to keep software revenue rising.

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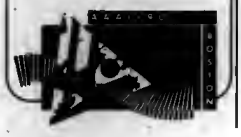

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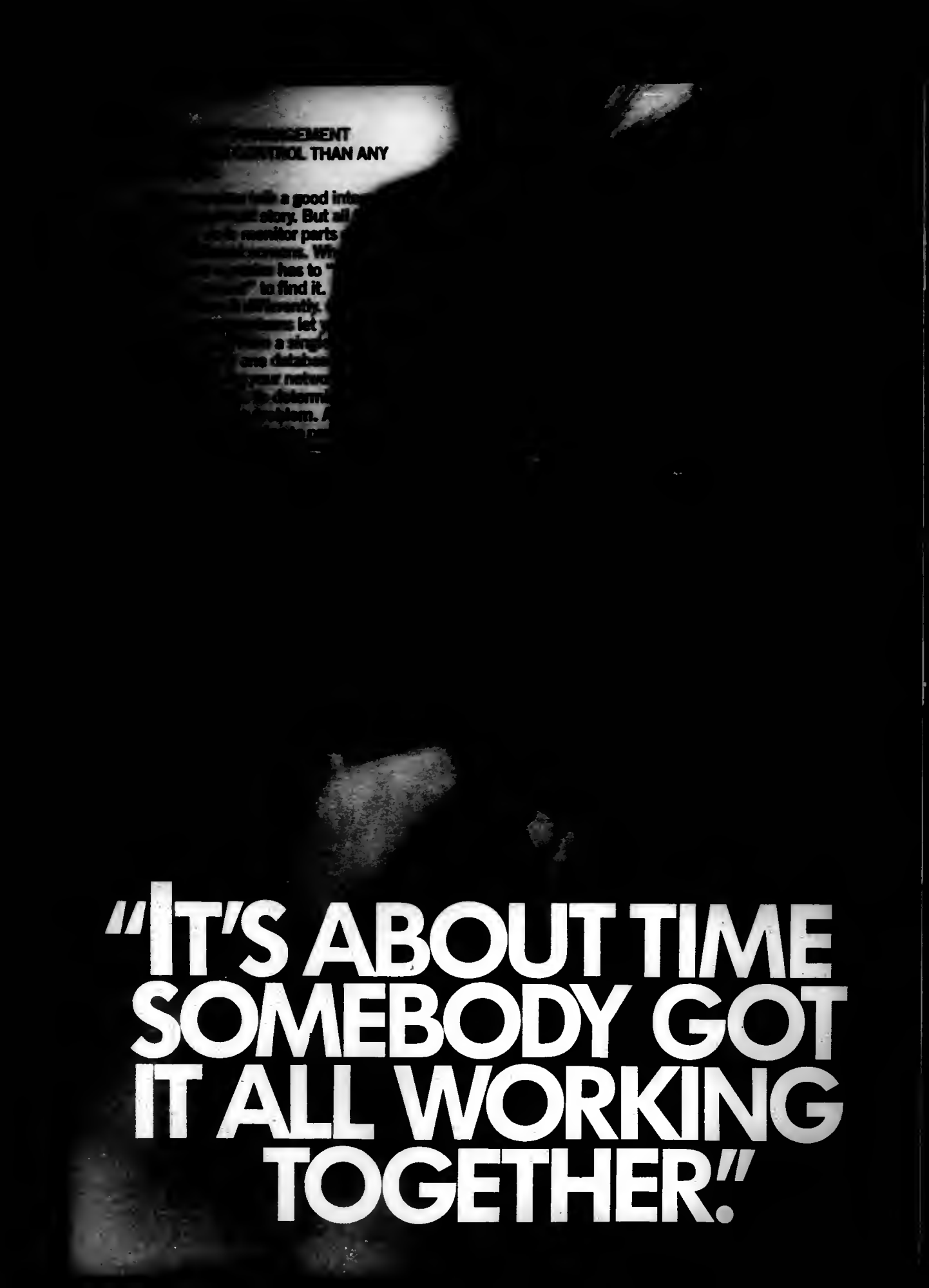
"IT'S ABOUT TIME
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IT ALL WORKING
TOGETHER."

DBMS

CONTINUED FROM PAGE 29

Corp. in Franklin Park, Ill. The firm had been struggling with an application load under VSAM but was wary of the major investment required to go relational, according to James Oehlstrom, director of MIS at BWD. Not the least of those concerns was the task of rewriting thousands of lines of code. When that is added to the cost of hardware and the DBMS package itself, "you're talking about a major investment," Oehlstrom said.

However, advances in software, combined with low-cost, powerful hardware, have opened new options. In conjunction with a conversion from an IBM 4381 mainframe to a Novell, Inc. local-area network-based system, the firm is implementing its first DBMS and fourth-generation language (4GL), Information Builders, Inc.'s PC Focus.

Oehlstrom said the difference in cost between implementing a DBMS on a network and on a mainframe is hundreds of thousands of dollars. Many mainframe-based DBMSs are priced at more than $100,000, he said, while a network version can cost as little as $5,000. Yet, with multiple servers, the Novell system will have the equivalent horsepower of the 4381, Oehlstrom he said. He added that a 4GL will facilitate the conversion of existing applications.

Among the benefits Oehlstrom expects will be ease of applications maintenance. The access methods of file systems such as VSAM made it necessary to substantially modify programs when the structure of the data was changed.

SQL interface: Coming soon?

BY ROSEMARY HAMILTON
CW STAFF

The SQL interface for IBM's IMS database is coming — but maybe not as quickly as IBM originally planned or hinted just last month.

At an SAAWorld conference early last month, Earl Wheeler, an IBM vice-president, said, "soon we will announce an SQL interface to IMS data."

Some users contacted after Wheeler's announcement said they could use the tool to help users move about in a dual-database environment. The interface is intended to allow users in a relational environment such as DB2 to make the same types of calls to both DB2 and the IMS nonrelational database. It could be used as either an IMS-to-DB2 conversion aid or a coexistence tool.

However, at the International DB2 User Group (IDUG) meeting in Chicago two weeks ago, another IBM executive implied that this facility may not be quite ready. "We are working on one now for IMS," said George Zagelow, a manager of architecture and standards for IBM of the SQL interface. "The key will be its performance."

Zagelow, who delivered a keynote address at the IDUG conference, said "the jury is still out" on SQL's suitability for nonrelational database environments.

"[IBM is] not sure if it can be applied to other data storage formats," he said.

Mohr

CONTINUED FROM PAGE 29

result of advance planning has been the government's decision to stress standardization in order to provide for software interoperability to the extent possible.

For all too long, government programmers have been enslaved by proprietary operating systems software. Because the government, unlike the commercial sector, must consider all responsive sources of supply and is prohibited from making sole-source awards based on software compatibility, agencies have often purchased a variety of equipment in follow-on procurements over the course of several years. Each time a new vendor was awarded a contract, however, the agency had to port the software to a new operating system.

Unix, as an open system, is the closest thing to a standard available to the government. Standardization on Unix systems frees the government from the time, expense and effort of major porting. While some conversion is required to port to different processors, government programmers can spend more time on applications and less on ensuring compatibility. As an added benefit to users, standardization on Unix cuts training costs, since users do not have to learn a new system each time the Unix hardware vendor changes. Meanwhile, standardization on Unix speeds up the government's procurement process.

The government is strengthening its standardization on Unix through implementation of Posix. Compliance with Posix, which standardizes certain operating system functions, eases software interoperability among Unix systems.

Large commercial users are beginning to follow the government's lead. The commercial sector is starting to look for longer term solutions and is recognizing the importance of standardization and software interoperability. Especially as Unix systems become more user-friendly and as more applications become available, the commercial world will catch up with the feds in buying Unix systems.

Mohr is a partner at the law firm of Cohen & White in Washington, D.C.

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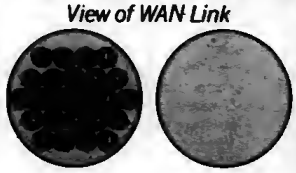

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Ingres pledges support to users

BY JEAN S. BOZMAN
CW STAFF

SALT LAKE CITY — Maintenance and support — or the lack of it — have become fighting words in the marketing wars between the major relational database management system vendors, and Ingres Corp. recently pledged not to leave its users feeling bruised.

"We don't pay enough attention to our installed user base," Chris Kenber, executive vice-president of sales at Ingres, told the 700 users gathered for the ninth annual meeting of the North American Ingres Users Association. "In our new fiscal year, 60 days from now, you will see us make many changes to serve you better," Kenber said.

Other Ingres executives made oblique references to archrival Oracle Systems Corp., which recently said it had to address quality and service issues in the face of sagging earnings [CW, May 7].

Although Ingres executives did not include details about improved service offerings in their speeches, Marketing Vice-President Chris Greendale and Engineering Vice-President Marilyn Bohl told *Computerworld* that Ingres customers could expect the following:

- The Ingres Advisor, an automated dial-up service, will make a good deal of Ingres' internal support database available to users through a toll-free phone line. The cost of the service, which is approximately 1% of a user's maintenance fee, will be covered by a slight increase in all users' bills. Personal computer users of the Ingres product would pay an additional fee of $300 per year to access the service.

The Advisor database, which suggests corrections to potential product problems in 1,500 subject areas, is scheduled to be available through modem dial-ups sometime in July.

- An advisory council, which is composed of 12 top Ingres accounts, will meet regularly with Ingres executives and engineers to provide feedback on product quality and service.
- A premium-support program for Ingres' largest accounts will be put into place, although the program will not be generally available at first.

"Customers who call in are going to get one of three people who know their account and their configuration," Bohl said.

Users here seemed interested in using the Advisor dial-up service. "When you're calling for help, sometimes it feels like you're grasping at straws," said Kathy Bross, manager of technical staff at US West's Denver network facilities center. "Often, it's the little tricks the support people have discovered that save you. That's the kind of information that isn't in the manuals."

Concurrent goes commercial

BY MARYFRAN JOHNSON
CW STAFF

WESTFORD, Mass. — Concurrent Computer Corp. has introduced a line of real-time Unix-based server systems customized for fault-tolerant commercial applications.

The AP/Server systems are intended for applications such as commercial stock trading or lottery systems.

James Sims, president and chief executive officer of Concurrent, said the systems are the first servers to combine crash-proof, real-time processing capabilities in a client/server architecture designed specifically for the commercial world.

The systems will initially offer partial or "scalable" fault tolerance through the addition of mirrored disks, specialized software or utilities, but company officials said full fault tolerance for complex commercial transactions will be added next year.

Don Russell, manager of Concurrent's commercial markets group in Westford, noted that fault tolerance for complex transactions is not presently available from database vendors such as Ingres Corp., Oracle Systems Corp. or Informix, Inc.

"Concurrent is certainly extending and building on what they have," said Sandra Gant, an analyst at Infocorp in Cupertino, Calif. "The most interesting thing here is the scalable fault tolerance, which allows users to buy in at any level of fault tolerance they want."

Gant said Concurrent's strategy is to remain focused on its market strengths in real-time systems, while using the AP/Server line to scoop up new business in the commercial Unix market. "We may start seeing them in commercial MIS shops soon. The things that make a real-time system good — immediate response and high data integrity — are also good for commercial applications."

The new line includes three product families — the AP/600 series, the AP/800 series and the AP/320 series — all fully compatible with existing Concurrent systems. Both the AP/600 and AP/800 series run under Concurrent's real-time Unix RTU operating system. Prices range from $48,000 for the base system to $320,000 for a fully configured system.

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PCs & WORKSTATIONS

MICRO BITS

Patricia Keefe

The wolf at 1-2-3's door

A recent survey of major industrial, financial and government users shows a not-too-surprising widely divided commitment to new versions of Lotus' 1-2-3 spreadsheet..

Conducted by Learn-PC, a Minneapolis-based producer of computerized training systems, the survey comes on the heels of warnings from some industry analysts that Lotus risks overwhelming its user base with 1990's avalanche of spreadsheet introductions.

After shipping versions of 1-2-3 for the IBM mainframe, Digital Equipment Corp. VAX/VMS and Sun Microsystems, Inc. Unix environments, Lotus followed up with a version for OS/2 (1-2-3/G) and plans to ship a semi-Windows-literate upgrade to the sluggish 1-2-3 Release 3.0 in September. This will be capped by delivery of a full-blown Windows implementation sometime in the first half of 1991. That's a lotta spreadsheets — six in all.

While Lotus executives have dismissed suggestions that users may be paralyzed by too many choices, early indications are

Continued on page 52

Programming's new object-ive

C++ is becoming a personal computer development standard

ANALYSIS

BY CHARLES VON SIMSON
CW STAFF

For most corporate personal computer software developers, object-oriented programming is still a blip on the horizon, but the growing availability of tools and compilers for C++ is helping it to pick up the pace.

"Today it is simply a learning-curve issue," said Bob Holmes, IS research analyst at Southern California Oil and Gas Co. "Just keeping up with the Cobol backlog is a major challenge; retraining Cobol programmers in not only new tools but in a whole new way of thinking is a big hurdle."

To date, the costs of moving to object-oriented programming, including major retraining and the obsolescence of existing code, have simply outweighed the benefits. The emerging standard of AT&T's C++ Version 2.0, however, is beginning to allow developers to mix object-oriented methods with traditional code-writing techniques.

Faced with less inertia and seeking to make their systems more easily portable while speeding maintenance, testing and debugging efforts, most PC software houses are beginning to write their code in the C++ object-oriented version of C. Even IBM, often slow to innovate in the development process, has said that it will move to C++, as well as Digitalk, Inc.'s Smalltalk. object-oriented language, to develop for OS/2.

The benefits for software houses can be substantial, and their efforts are transferrable to the corporate community. The most powerful feature of object-oriented programming is its capacity for inheritance. Inheritance enables far more economical and, more importantly, maintainable code because software objects can share attributes without requiring that the code implementing them be separately developed.

"Given the amount of simple duplication of effort required in traditional software development, that is going to be the main argument for training programmers in object-oriented languages," Holmes said.

Given the stress placed on development for a broad number of platforms, modularity is an important feature.

"As the application programming interfaces for the Macintosh, the PC and X Window terminals come closer together, you get a much stronger argument for C++," said Zane Shafer, vice-president of Computer Aided Management Corp., a software firm that does most of its development in C++. "The use of objects and code modules is the best fit to the way APIs are used, and that is the key to building systems in large companies across platforms."

Due to the slow performance of languages such as Smalltalk, object-oriented programming has not had much momentum in DOS programming. But largely because of work at Bell Laboratories, C++ has had some success displacing more research-oriented languages.

Borland International, Inc. recently became the first major PC software vendor to offer a C++ compiler that allows for efficient C++ code generation.

Microsoft Corp. is expected to follow soon with either a separate product or an upgrade to its C compiler. While the two companies will lend some marketing strength to the area, smaller players have been working on C++ tools for several years.

"We started working with C++ when it was still a pretty primitive development environment," Shafer said. "It was worth it then, but with the stronger range of tools, it is a far more effective process."

Mips enters the workstation sprint

BY J. A. SAVAGE
CW STAFF

Mips Computer Systems, Inc. recently announced a workstation configuration based on its high-end server.

Based on its own R3000 reduced instruction set computing (RISC) chip, the Magnum 3000 workstation runs at 25 million instructions per second (MIPS) or 17.8 Specmarks (a benchmark from the Systems Performance Evaluation Cooperative) and costs $8,990. It is board-upgradable to the next Mips generation, according to Joe Di Nucci, vice-president of desktop marketing strategy.

While positioned against the Sun Microsystems, Inc. Sparcstation 1+, the Magnum 3000 offers nearly twice the performance, according to Kathleen Hurley, an analyst at Dataquest, Inc., in San Jose, Calif. "But Mips is going after more commercial users," she said.

The workstation can be configured with up to 128M bytes of memory and 6G bytes of disk storage, according to Michael Cohen, desktop marketing manager at Mips Computer. The entry-level computer has a monochrome display, but it is also available with color.

The 2-year-old R3000 chip is still Mips' fastest microprocessor, and the company currently offers three servers built around it.

Mips sells not only the system configurations, but also will sell individual components. For instance, Digital Equipment Corp. uses the R3000 in its 3100 workstation, and Control Data Corp. resells a server based on the R3000 chip.

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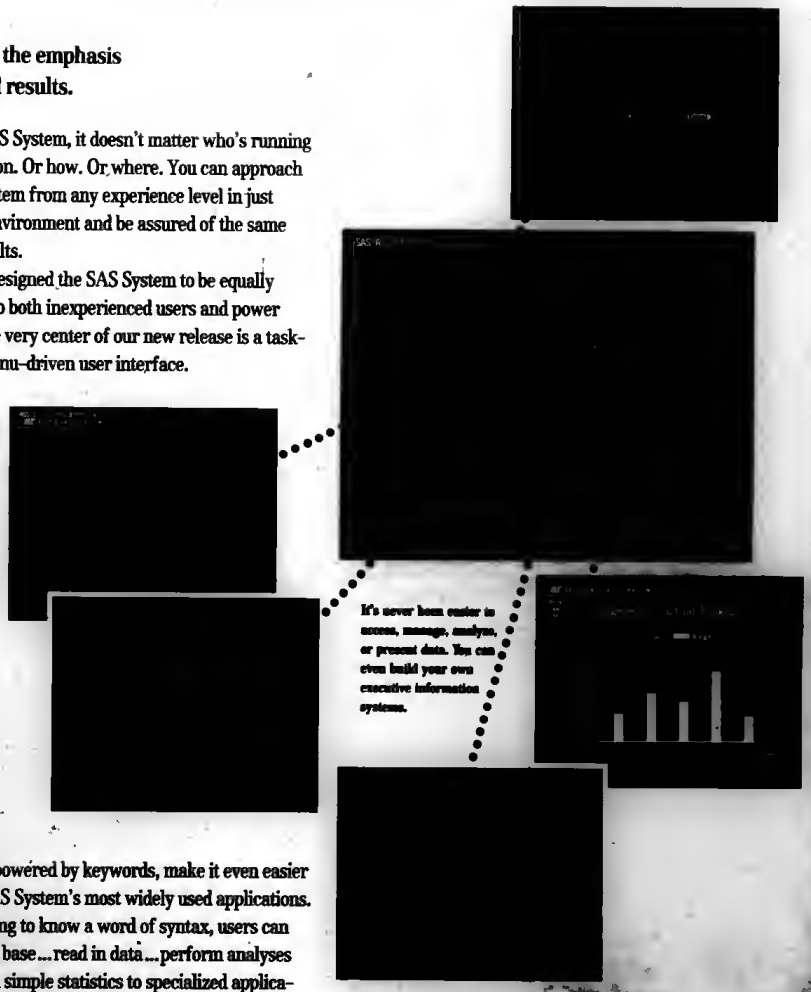

The menus, powered by keywords, make it even easier to run the SAS System's most widely used applications. Without having to know a word of syntax, users can access a data base ... read in data ... perform analyses ranging from simple statistics to specialized applications such as forecasting, project management, and quality improvement ... and generate a variety of reports and graphs.

If you're approaching the SAS System from an applications development viewpoint, you'll find all the capabilities you'd ever expect in a powerful and productive programming environment. And then some.

There's a command-driven interface especially for systems analysts, applications developers, MIS personnel, and the Information Center staff.

From this interactive windowing environment, you can use the SAS System's English-like commands to build applications in a fraction of the time. And you can customize any application any way you choose by adding user-friendly menus and fill-in-the-blank screens.

A dynamic programming interface lets you customize your development environment. As your program takes shape, so do the results.

Monitor programs as they execute. Pull-down menus make editing, file management, and other essential programming tasks easy.

Directly access and manipulate the SAS System's English-like command language.

We've made sure you'll never get boxed in.

While the industry struggles to define a common operating environment, the SAS System eliminates the need for one.

Our exclusive MultiVendor Architecture™ gives you the power to decide where a particular application belongs — in the data center, at the departmental level, on the desktop, or a combination of all three. The SAS System, and the work you do, is portable across the entire range of computing environments.

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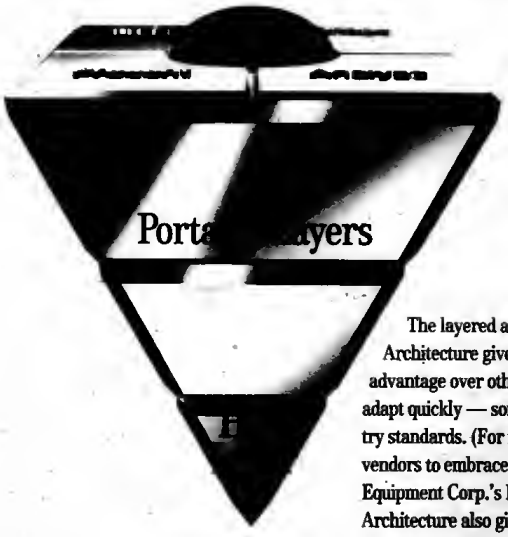

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The layered approach of our MultiVendor Architecture gives the SAS System a unique advantage over other software. The SAS System can adapt quickly — sometimes instantly — to new industry standards. (For instance, we were among the first vendors to embrace both IBM Corp.'s SAA and Digital Equipment Corp.'s NAS in one system.) MultiVendor Architecture also gives you the freedom to exploit new and emerging hardware technologies — such as DECwindows,™ X Windows, Presentation Manager,™ and other native windowing interfaces — without worrying about your existing inventory of applications.

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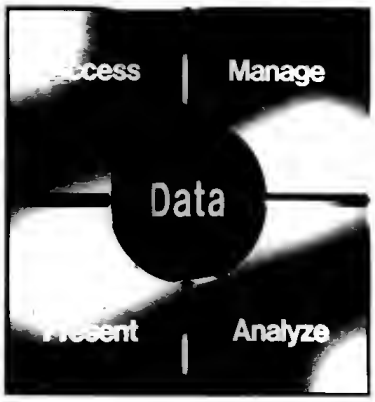

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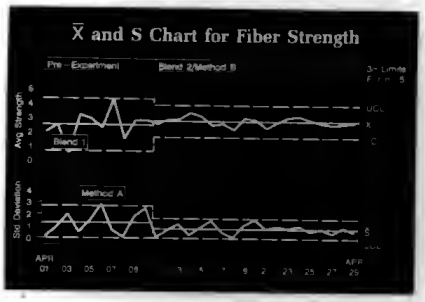

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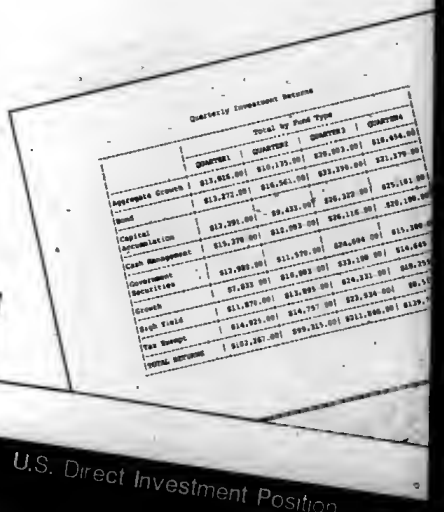

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PRODUCT REVIEWS

Superbase has point-and-click assist

Precision Software's management system combines ease and strength

Superbase 4 Windows from Precision Software, Inc. combines a graphical user interface with a full-feature relational database management system. Consistent with the Microsoft Corp. Windows environment, it is mouse-oriented with pull-down menus, push-buttons, radio buttons and check boxes.

Menu selections are used to create and maintain databases. Data can be viewed in full-screen record format, table format or through the use of a screen form. Unique browsing buttons make it easy to move through the data and locate records.

Data types include character fields up to 4,000 characters long, numeric fields up to 14 significant digits and date fields. In addition, external text files and graphics images can be associated with each record. Field definition features stored in the file's data dictionary can include validation, formulas, calculated fields, formatting controls, read-only capabilities and required attributes.

Validation functions allow the looking up and verification of foreign keys in their source file. Information can be extracted from other files and included as a part of the record through the use of virtual calculated fields. A multi-response field attribute allows the storage of multiple values for a field in a single record. Indexes are opened and maintained automatically, and each file can have up to 999 indexes.

Commands up to 255 characters long can be assigned to up to 40 function keys. A no-frills text editor is included for use with mail merge and to edit external text and program files.

The Superbase 4 forms editor is a cross between a desktop publishing program and a paint program that understands databases. Forms can be laid out with any number of boxes, lines and colors. Fonts can be specified for any object.

Communications support can be used either interactively or under program control. Transfer protocols are Xmodem, Xmodem-CRC and WXmodem. Data can be imported and exported in formats such as ASCII delimited, Ashton-Tate Corp.'a Dbase, Enable Software, Inc.'s Enable, Microsoft Corp.'s Excel, Lotus Development Corp.'s 1-2-3, and .DIF. Superbase can read and query Dbase data files directly without an import, but it cannot modify data in Dbase files.

Query definition lets users specify the fields to be displayed in the query, a sorting order, any filter condition and reporting functions. Fields from any number of tables can be displayed together. The links between files are defined as a part of the filter expression, which can be as long as 255 characters. Font selection is controlled by the Set Page menu. Once a query has been defined, it can be named and saved to a file for later use.

Superbase 4'a forms designer is also the report writer. A data entry form can be sent to the printer, displaying a what-you-see-is-what-you-get image of the form and data. For multirecord reporting, a report form is drawn in a manner similar to form creation. Summary type reporting functions include average, mean, count and total. Graphical boxes are not supported in a report, and the font selection within a report cannot be varied.

Precision Software'a *Superbase 4 is Windows-consistent*

The program comes with one manual that covers interactive use of the database and text editor, and one that discusses the forms editor and programming language. Also included is a quick-reference guide and a quick-start guide. On-line help is context-sensitive and includes a topic index.

Ease of installation varies, depending on whether Superbase is installed under a full Windows system or with the runtime version of Windows 2.1 that comes with the package. Once the system is up and running, learning the basics is a breeze, but it will probably take several weeks to

Continued on page 53

NCR has pricey power in Micro Channel 486 box

NCR Corp. has recently jumped into the Intel Corp. 80486-based computer market by introducing its PC486/MC, a small, footprint IBM Micro Channel-based personal workstation aimed at power users who work in intensive multitasking, computer-aided design or Microsoft Corp. Windows environments.

In addition to the Micro Channel Architecture (MCA), the PC486/MC offers a 25-MHz zero-wait-state 80486 CPU; built-in serial, parallel and mouse ports; a 175-watt power supply; a 100M-byte, 3½-in. small computer systems interface (SCSI) hard disk; interleaved write-back random-access memory cache and an IBM Super Video Graphics Array (VGA)-compatible adapter.

The PC486/MC is quick and has both impressive software and hardware compatibility. It does not allow switching to a lower CPU speed from the keyboard or front panel. Instead, CPU speed may be set using the system reference disk.

The system's expandability is about average for small-footprint MCA machines. Configuring the system with 4M bytes of memory and a 3½-in. 100M-byte drive leaves open four expansion card slots and one drive bay. The serial, parallel and mouse ports, along with the floppy drive controller, are built into the main board. A SCSI drive controller occupies one slot and features an external connector, allowing quick and easy attachment of external hard drives. Documentation for the PC486/MC is complete, well organized and informative. The system is easy to set up and fairly well built. Its internal modular construction makes removing components fast and easy. The power switch is conveniently mounted on the front panel but is somewhat exposed. The PC486/MC uses a reference disk for automatic system configuration. The system's motherboard contains a high number of advanced surface-mount components; however, it also has several patch wires on the board.

NCR PC486/MC
Price: $13,690
• Performance: Very good - excellent
• Documentation: Very good
• Setup: Very good
• Workmanship - Satisfactory
• Support: Unacceptable - satisfactory
• Value: Satisfactory

NCR's PC486/MC *provides high speed at a high cost*

Although NCR backs its computer with a one-year warranty and a 30-day money-back guarantee, the company does not provide direct end-user support.

The PC486/MC's price of $13,690 is a good choice for experienced power users who are not highly price conscious.

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Well, since "Mac-like" is the promise on every lip, this might be a good time to point out just what a Mac* is like.

What makes a Macintosh a Macintosh is not just cheerful icons, a mouse, pull-down menus and other surface manifestations.

A Macintosh is a Macintosh from the inside out. Conceived from the chip up to work intuitively and visually.

Because it's truly consistent, the entire family of Macintosh personal computers all run the same software with identical point-and-click simplicity. Because it's a true system, Macintosh printers and other peripherals all connect together quickly and logically. Just plug them in and turn them on.

Because we engineer both the hardware and its operating software, Macintosh runs with the smooth speed and precision you'd expect from any perfectly integrated design.

And because Macintosh isn't a "graphical" shell grafted on top of a character-based system, it doesn't expend lots of expensive computing power trying to do something it wasn't designed for.

Which is why, for less than it usually costs to buy the software and the high-end hardware needed for a Mac look-alike, you can have the true article.

Instead of making do with a handful of graphicized programs, you can choose from the thousands of highly innovative business appli-

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try the only one that actually works that way.

cations developed specifically for Macintosh over the last seven years. And instead of patiently following the long path from yesterday's MS-DOS to Windows in the interim and to OS/2 in the someday, you can make one simple step to Macintosh.

The benefits of that step, according to a new independent study* by Diagnostic Research, Inc., are considerable.

It seems people prefer a machine that works like people do. And they get more done with it: Users rated Macintosh 14% higher for overall satisfaction and 13% higher for performance than for PCs running Windows. Which, according to information managers in the same study, translated into productivity ratings which were 32% higher.

Meanwhile, what would you sacrifice by making the change to Macintosh? Not your PC files. Every Macintosh equipped with an Apple® SuperDrive™ disk drive moves information between a Macintosh and an MS-DOS or OS/2 PC on standard 3½-inch floppy disks.

And not your PC programs, either. With products like SoftPC a Macintosh can run virtually any DOS application.

We invite you to call 800-538-9696, ext. 875, for the names of your nearest authorized Apple resellers.

Then come in and see what inspired the monumental changes you've been reading about.

After all, now that everybody else is trying to sell you a Macintosh, maybe you should buy one.

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Hunter stalks partners with DOS-to-Unix port

BY CHARLES VON SIMSON
CW STAFF

MOUNTAIN VIEW, Calif. — Ashton-Tate Corp. recently released its Multimate spreadsheet for Unix platforms. While the transition may help the product's sales only marginally, the technology that enabled the port could offer a strong boost to the desktop Unix market.

The port was done by Hunter Systems, Inc. Their patent-pending technology for porting DOS applications to Unix has already attracted many of the most prominent players in the personal computer software arena.

Besides Ashton-Tate's Multimate, Hunter, based here, has begun shipping Unix versions of the Borland International Quattro and Lotus Development Corp. 1-2-3 spreadsheets, Dataease Corp.'s Dataease database and Xyquest Corp.'s Xywrite during the past three months. In addition, the firm is completing negotiations with Microsoft Corp. to port its Word word processor to Unix versions beyond its own Xenix and to The Santa Cruz Operation's Unix platform.

"We are doing the work to aggregate the segmented Unix market," said Colin Hunter, the firm's chairman. "We are moving into the area of shrink-wrapped productivity software for Unix. That is attractive to the publishers, and we hope it will be to users. They are getting the actual packages, not clones for Unix."

The company has only a few customers with evaluation copies because it has just recently begun shipping the applications. Although software publishers who have signed on are impressed with both the concept and the underlying technology, they caution that implementing Unix is still much trickier than DOS.

"The product is unique in the number of platforms it supports and the performance it delivers," said Rob Dickerson, general manager of the database group at Borland. "But even though these are familiar applications, it is not something you are likely to go into Egghead [Discount Software] to buy. It will be used mostly on very sophisticated Unix client server systems."

The technology and marketing techniques employed by Hunter differ markedly from typical porting arrangements. Hunter buys the software license from the publisher under a typical OEM license structure. Using proprietary porting technology, the company transforms the DOS execute commands into generic Unix XDOS code. Hunter then markets the Unix version of the application through the publisher's direct sales force.

In a separate step, the company has created a series of hardware platform specific binary compilers that are loaded onto servers. When the XDOS applications are loaded onto the server, the compiler or transformer, as Hunter calls it, modifies the XDOS code for the specific hardware environment. Transformers are available for platforms from five vendors: Sun Microsystems, Inc., Unisys Corp., Motorola, Inc., Arix Corp. and NCR Corp.

At face value, the technology resembles DOS emulation software that today allows DOS applications to run under Unix, but it differs in some important ways. The most significant is that an emulator decodes DOS commands and executes them as Unix commands on the fly, an extremely compute-intensive process that significantly degrades performance.

Businesses have always recognized the potential of the Sun workstation. Now Lotus helps them realize it.

The workstation has long been regarded as an incredibly powerful system. But it has lacked the one application it needed to become a major force in business.

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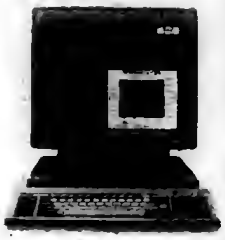

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Nynex system learns to read

BY JAMES DALY
CW STAFF

WHITE PLAINS, N.Y. — The next chapter in the evolution of handwriting-recognition technology is being penned at the Nynex Science & Technology Center, where computer scientists have patented a workstation-based software system said to read the scribbled numbers on checks in four seconds.

The patented application was developed by researchers Keith Loris and James A. Euchner in the laboratory's artificial intelligence sector and is based on neural network technology.

Initially, documents are scanned and digitized. The information is then fed into a series of Sun Microsystems, Inc. Sparcstation 1 workstations, where each character is compared with preprogrammed information that summates the typical features of letters and numbers.

The software system is also designed to know that billpayers normally pay the amount they owe; thus, if several numbers on the check fit the amount, the computer is able to infer which is correct. If it is still confused, the system then asks for human help.

Loris said he expects applications to be found in areas ranging from mail distribution to forms processing, because the handwriting-recognition technology has the potential to read other symbolic information such as diagrams and graphics.

The application has already kicked in at Nynex, where officials say it is smart enough to automatically handle 40% of the 250,000 checks received daily by New York Telephone Co.

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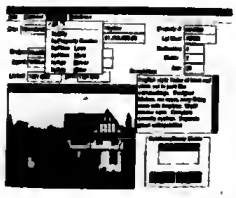

No wonder more developers are turning to SQLWindows for the graphical database applications they need. Its unique combination of SQL with a 4GL graphical programming environment, brings even the most complex applications vibrantly to life. While cutting development time from months to days.

The result is a whole new breed of programs with exciting graphics, mouse support, and pull-down menus. Multi-user programs that work with most PC LANs, and provide access to the most popular SQL database servers.

In fact, once you've tried SQLWindows, you may never return to your old character-based tools. What's more, it's just one member of an entire family of solutions for enterprise-wide data sharing from Gupta Technologies. Including SQLBase® Server, the fastest LAN-based server available today, and SQL-Network, the solution for DB2 and Oracle connectivity.

The thrill is here: call Gupta today.

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Gupta
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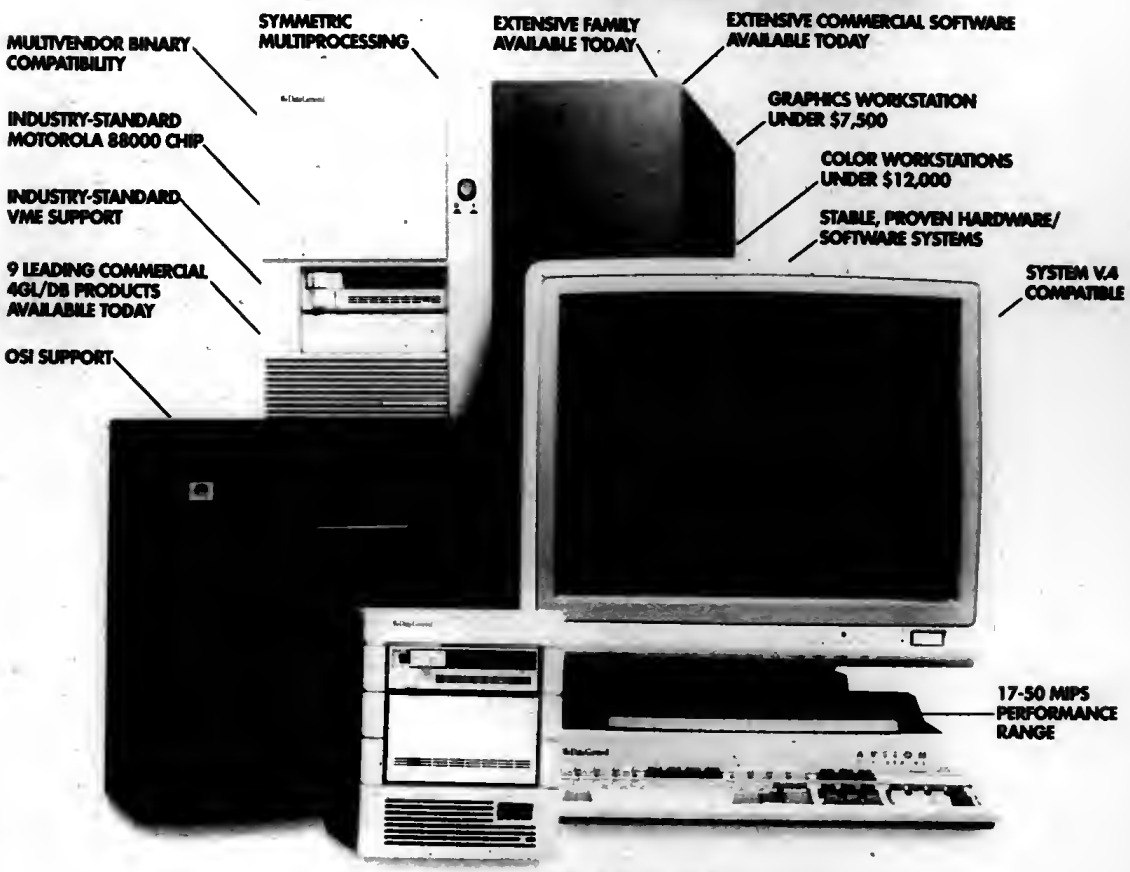
vs. FIRE



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DRI woos laptop users with free DOS utilities

BY CHARLES VON SIMSON
CW STAFF

MONTEREY, Calif. — Claiming to provide significantly more value than Microsoft Corp.'s current flavor of DOS, Digital Research, Inc. (DRI) hopes to regain the hearts and minds of end users. The company hopes to maintain a niche in the market for the DOS operating system on laptop and handheld computers.

DRI will offer DR DOS 5.0, the newest version of its operating system, directly to end users via a toll-free number by the end of this month. The firm has sweetened its offer by including several software utilities free of charge that are not included in current versions of market-leader Microsoft's MS-DOS.

"They have added s number of functions that will make their product very competitive with MS-DOS," said Mary Chin, associate director of the personal computer systems group at Dataquest, Inc., a San Jose, Calif., market research firm. "While their long-term strength is likely to be in handheld and laptop niches, this gives them s broad appeal."

Indeed, most of DRI's DOS enhancements, including the ability to order directly from the company, are aimed at strengthening its position in the market for laptop operating systems. While DRI has had tough times, it feels that its DOS will keep it alive. "Microsoft has been competing with us as though it is s death watch," DRI President Dick Williams said. "We think we can show features you just can't get anywhere else."

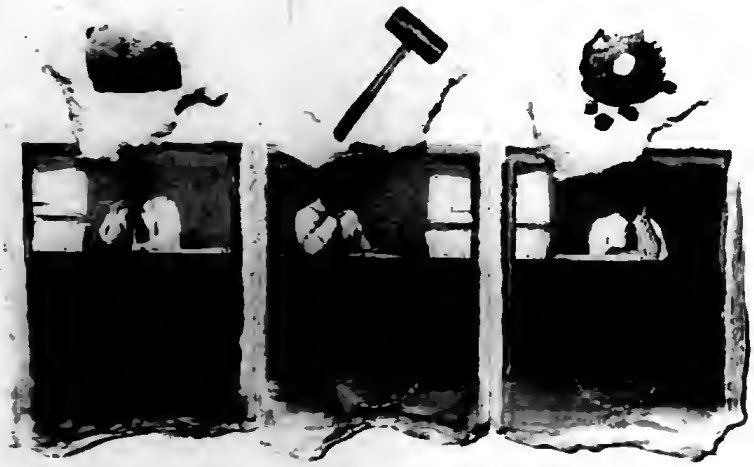
DRI currently accounts for 15% of the DOS installed base, according to company estimates. Market researchers do not break down the DOS market by vendor.

DRI is first to market with a battery-saving software feature that will extend the life of laptop batteries by as much as two to three times, according to the company and analysts. The software monitors keystrokes and reduces power use when the CPU is inactive.

"The battery-saving software is s true necessity for many people. DRI has it first, and that is going to spur a lot of purchase decisions," Dataquest's Chin said. "The direct order capability will allow customers to get it even if the manufacturer of their system bundles MS-DOS. Creating enough value to get someone to go to that trouble is key for DRI."

DRI is also first to allow its operating system to be accessible directly from a computer's read-only memory.

DR DOS is fully compatible with MS-DOS and will run all applications developed for Microsoft's system. In addition, DR DOS will support Microsoft's Windows environment.



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Lotus® 1-2-3® has given people throughout your organization a more productive way to use their PCs. But they've never been able to fully exploit the advantages of working together. Because they've lacked the one application that could connect their PCs and unite them with the resources of the mainframe.

Presenting Lotus 1-2-3/M™—the Hub of IBM® Enterprise Spreadsheet Computing. Now everyone in your organization can work together building 1-2-3 applications that can span your entire enterprise.

In a partnership between IBM and Lotus, 1-2-3/M has been designed specifically to take full advantage of the power and networking capabilities of the System/370™ environment. So data from PCs and the mainframe can be consolidated into a master spreadsheet, whether people are working next door or around the world.

The DataLens™ architecture of 1-2-3/M provides direct access to both DB2™ and SQL/DS. Users can query and retrieve data directly into their worksheets, without having to learn a database language. What's more, with The Lotus Spreadsheet Connection, information can easily be exchanged between PCs and the mainframe.

And 1-2-3/M isn't merely like 1-2-3. It *is* 1-2-3. That means your current investment is protected, because it offers application portability and full file compatibility with previous and current releases of 1-2-3. And applications developed on the PC will also run on the mainframe, including formulas and macros. So your people can get to work right away.

For more information, call your IBM Marketing Representative or **1-800-343-5414**, at extension CBI-0103. After all, people work better once they're able to work together.

Introducing Lotus 1-2-3/M

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Keefe

CONTINUED FROM PAGE 43

that some Release 2.0 and 2.2 users are already wrestling with whether to go to Release 3.0 or skip it altogether, jumping over to 1-2-3/G.

According to Learn-PC's survey of 275 organizations representing over 21,000 1-2-3 users, an overwhelming number — 84% — of these users are *still* using old versions of 1-2-3.

For example, 81% are using 2.01, and just 14% are using 2.2. The old 1A Release, discontinued in early 1986, garnered s 3% share, topping the 2% using the high-end Release 3.0 shipped last June. Many also said their firms were using multiple versions of 1-2-3.

These organizations were split over which version of 1-2-3 they wanted to upgrade to: 50% said they wanted training for Release 2.2, while 44% gave the nod to Release 3.0. Learn-PC Chief Executive Officer Gil Mann suggested that the huge installed base of older versions of 1-2-3 shows that users are reluctant or logistically unable to retrain their large existing base of Lotus users.

That may be so, but there are other reasons for clinging to the old. For one, it's familiar. For another, it probably does the job just fine for an awful lot of users. Lotus CEO Jim Manzi is the first to admit that software is often two years ahead of the user base.

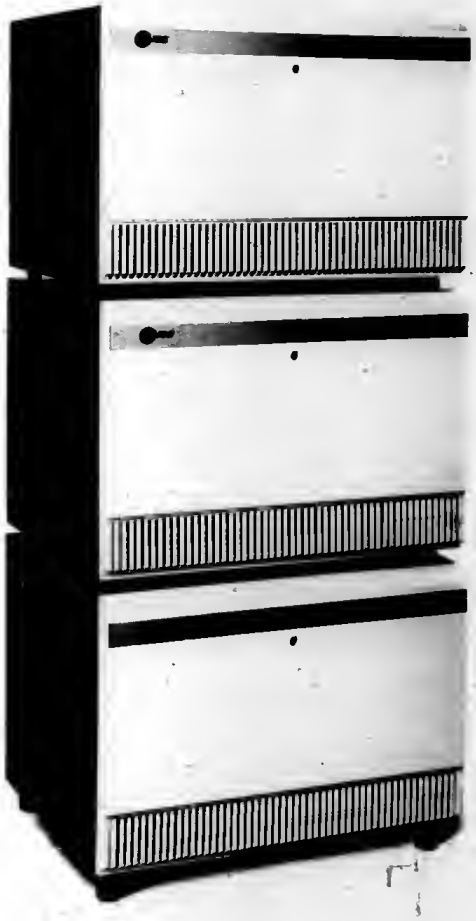
Chances are, the Windows versions of 1-2-3 will spur some users to abandon the old tried-and-true and upgrade. After all, if you couldn't go to Windows because your vendor didn't support it, and you weren't going to OS/2 for another couple of years, some users may have figured, why go to the expense of upgrading to 2.2 or 3.0 — which lacked its predecessor's publishing and graphics strengths? Why not wait and go to 1-2-3/G later? A wait like that could be poison to the upturn in Lotus' financials.

After all, Lotus' current earnings bubble has blown up out of a virtual nonstop shipment of new products so far this year. But as Learn-PC points out, sales are not always the best barometer of usage. Just because it's in the channel doesn't mean it's on the desk.

Scrapping the weakened 3.0 for the Windows-compatible Release 3.1 may be just the kick Lotus needs to keep the wolf that is baying at the door of industry software sales away from its stoop.

Keefe is *Computerworld's* senior editor, PCs and workstations.

How everyone else gets their great ideas.



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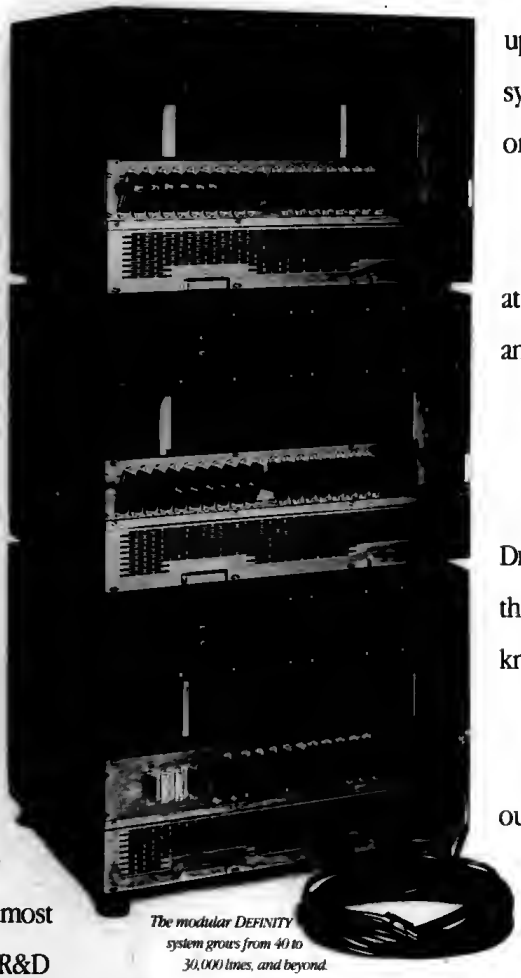

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IIFX has design, speed appeal

Macintosh's performance a good fit for users doing complex calculations

REVIEW

Apple Computer, Inc.'s new Macintosh IIFX offers an innovative motherboard design and impressive performance. The machine's souped-up speed should appeal to users performing time-consuming processes such as tasks requiring complex calculations.

The IIFX is based on a Motorola, Inc. 68030 chip running at 40 MHz. It also includes a 68882 math coprocessor and several other processors that offload tasks from the CPU. Two I/O processors provide intelligent support for the input and output controllers. One assists the floppy and Apple Desktop Bus, while the other facilitates the flow of signals to and from the serial ports. Each I/O processor has its own 32K bytes of random-access memory and is powered by a 2-MHz version of the 6502 CPU.

The dedicated small computer systems interface (SCSI) direct memory access (DMA) is a high-speed bus that can handle the internal hard disk and up to six additional external SCSI devices. The DMA improves the performance of the SCSI bus, offering a transfer rate in excess of 3M byte/sec.

The system comes with one or two 1.4M-byte Super Drives and 4M bytes of RAM, with an optional 80M- or 160M-byte internal hard disk. Its 18.7- by 14.4-in. footprint is identical to that of the IIX and the original Mac II. The IIFX does not have on-board video capabilities.

Other speed-enhancing features include a Fast Memory Controller and a built-in Page Memory Management Unit that supports virtual, shared and protected memory in specified operating systems.

The new single-processor direct slot provides a fast, 32-bit direct interface to the system bus for high-speed, third-party option cards and adds a seventh slot to the IIFX's six Nubus slots.

The six Nubus slots are entirely compatible with the slots found in other Mac II systems. The IIFX also has the same Apple Sound Chip as the rest of the Mac II line. The IIFX has eight RAM single LU line memory module (SIMM) slots that can accommodate 4M or 8M bytes of memory. The SIMMs, however, have 64 pins, as opposed to those used in other Macs, which have 30. Systems can also be ordered with RAM that has parity support.

Macintosh IIFX
Price: $9,869
• Performance: Excellent
• Documentation: Excellent
• Setup: Very good
• Ease of use: Excellent
• Workmanship: Excellent
• Support: Poor
• Value: Very good

Apple's Mac IIFX *comes with one or two 1.4M-byte Super Drives*

The IIFX has a built-in zero-wait-state 32K-byte static RAM cache along with a 256-byte internal cache that is standard on Motorola 68030 processors. A 512K-byte read-only memory SIMM socket comes with 32-bit Quickdraw and will allow for the installation of a parity-generating chip and parity dynamic RAM.

With the exception of the processor direct slot, the IIFX has the same expansion options as the IIX. These include two Appletalk serial ports, two Apple Desktop Bus ports and a single SCSI port that can accommodate six SCSI devices in addition to the internal hard drive.

The computer comes with several generic Mac manuals, including "Getting Started With Your Macintosh." The IIFX-specific documentation includes a disk that explains the performance and hardware of the IIFX. For setup, there is a guide for special options and technical information and a disk and pamphlet called "Network Products Installer."

All of the external ports are clearly marked. It is necessary to remove the lid to insert additional Nubus or processor direct cards. The lid is secured by plastic fasteners and a single metal screw. Lifting the hood reveals superlative workmanship. Components are surface-mounted on both sides of the motherboard, and there is no evidence of last-minute patches.

Apple recommends that users have dealers install added RAM. Initializing the hard disk and the operating system requires just a few clicks of the mouse.

Apple products come with a one-year warranty, retroactive to Jan. 1, 1990. Apple will reimburse customers for repairs made by authorized service centers. Repair services are still limited to Apple dealers.

A Mac IIFX with 4M bytes of RAM and an 80M-byte internal hard disk lists for $9,869. This is $1,700 more than a Mac IICI with the same amount of memory and disk space. Considering the added productivity that the IIFX offers, the additional $1,700 seems like a bargain.

Apple Computer, 20525 Mariani Ave., Cupertino, Calif. 95014, (408) 996-1010.

Superbase

FROM PAGE 45

become fully acquainted with all of the program's capabilities.

Despite the graphical interface, macros, function keys and control panel, there are many minor flaws and irritants that detract from Superbase 4's ease of use.

Superbase provides basic features to prevent data loss, such as requiring verification before a deletion. Three levels of password control can be defined for each data file. Error messages are listed and discussed in the manual.

Precision Software provides 90 days of free support on a non-toll-free line and unlimited facsimile support. It also offers extended support plans and support over Compuserve. Technical support personnel are knowledgeable, although understaffed.

For $695 for the single-user version, Superbase 4 Windows provides all the muscle of its character-based cousins while adding the capability to integrate graphics and high-quality output into applications. The network version costs an additional $995 per five users. For an applications developer who wants to take a step into the graphical user interface future of database, Superbase 4 may be just the ticket.

Superbase 4 Version 1.0
Price: $695
• Performance: Satisfactory - excellent
• Documentation: Very good
• Ease of learning: Good
• Ease of use: Good
• Error handling: Very good
• Support: Poor - satisfactory
• Value: Very good

Precision Software, 8404 Sterling St., Irving, Texas. 75063, (214) 929-4888, (800) 562-9909.

Two avenues to the essence of portability

BY RICHARD PASTORE
CW STAFF

Two new products announced this month boil portable computing down to its bare essence. One machine lets users transport just the guts of the system, while the other takes it a step further — you carry only the hard disk data.

The Brick from Ergo Computing in Peabody, Mass., is a portable chassis stripped of the keyboard and monitor. It is intended for users who work primarily at the office but would like to take their computer home often.

Instead of lugging the desktop machine back and forth or transferring data and applications to a portable each day, users detach the 8.3-pound Brick from their desktop keyboard and monitor, take it home in their briefcase and hook it to their home-based I/O devices, explained Ergo President Tom Spalding.

Analysts said the design makes sense from a market standpoint. "For the most part, people are using laptops between the office and home. They aren't traveling with them," said Frank Mischnoff, an analyst at Meta Group, Inc. in Westport, Conn.

> THE removable drive allows users to secure their hard disk data by removing it from the PC and locking it in a drawer.

The Brick, due to ship next month, packs a 16-MHz Intel Corp. 80386SX chip, 1M to 8M bytes of system memory, a 40M-byte hard disk, a floppy disk drive and a 2,400 bit/sec. modem into its aluminum, ruggedized case.

A smaller Brick model offers one 16-bit expansion slot, while a longer version offers two slots. Both versions run DOS, OS/2 and Unix and are powered by AC current only. The machines also offer 100M- and 200M-byte hard disk options.

Even more barebones is the removable 20M-byte hard disk unveiled last week by Winter Park, Fla.-based Disk Technologies Corp. The 7-ounce device is about the size of a Nintendo game cartridge.

Users can reportedly yank it out of one IBM Personal Computer AT or compatible and pop it into another. The disk, available immediately, also works in most portables and laptops, the company said.

The user must first install a special docking bracket into the space the internal hard drive would normally occupy. This installation does not void the host machine's warranty, according to President Douglas Caldes.

Caldes noted that, in addition to its portability, the removable drive allows users to secure their hard disk data by removing it from the PC and locking it in a drawer. "It's extra security — if there's no hard drive in there, you can't possibly get at it," Caldes said.

Ergo's Brick *is a keyboard- and monitor-less chassis*

The security aspect would be particularly important to bank auditors and accountants, he added.

The company plans to unveil a 50M- or 60M-byte capacity version by year's end. A 100M-byte model is also planned, Caldes said.

Though these products increase users' flexibility, they also increase the risk of data loss. If the Brick is storing a user's office data, then the chance exists that vital files and applications could be left behind in a cab and never seen again. The removable drive also seems particularly apt to get lost.

Both vendors advise users to exercise prudent backup practices. Disk Technologies is also adding low-level data encryption to the removable drive.

The Brick and the drive will be sold directly and are base-priced at $2,695 and $695, respectively.

Yes, it's just like your good old PC—familiar and easy to use. No, it's not like your good old PC—underpowered and short of memory, especially on a network. It's a MultiPersonal™ Computer from Motorola, and it has what you need.

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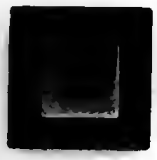

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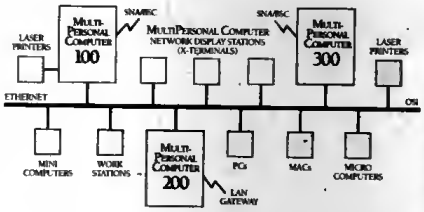

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MultiPersonal Computers come in three sizes for workgroups from 2 to 64 stations. Plus a choice of 17-inch color, or 16- and 19-inch monochrome Network Display Stations. And system peripherals including laser printers, scanners, streaming tape and optical drives.

MOTOROLA
Computer Group

Service strategy calls on laptops

ON SITE

BY SALLY CUSACK
CW STAFF

TUSTIN, Calif. — When TRW, Inc.'a Customer Service Division purchased Computer Output Microfilm (COM) service rights from Bell and Howell Co. in 1986, it became a major service provider for several large companies involved in COM technology.

The move also meant that TRW had to maintain a significant new and diverse customer base, which included banks, real estate firms and data services companies. Thus, the Tustin-based branch of TRW's Information Systems Group had to come up to speed quickly.

"COM equipment is like a snowflake — no two machines are alike," said Larry Blaha, TRW's COM product support manager. To help create and maintain a cutting edge in COM services, TRW technicians are equipped with Toshiba America, Inc. 3100 laptop computers running intelligent diagnostic software from Rosh Intelligent Systems, Inc. TRW had previously used Rosh products in maintaining automated teller machines.

TRW field engineers are responsible for diagnosing and repairing all technical problems associated with clients' COM equipment, and the Computer Aided Intelligent Service (CAIS) package from Rosh allows them to maintain a dynamic database and automatically log every event in the service call.

The software automatically injects and interprets diagnostic tests via a diagnostic expert system designed to guide engineers through a logical sequence of actions.

"We can actually see how the program has helped them," said Scott Baker, manager of microfiche operations at Standard Data, Inc. in Salem, N.H. Standard Data, a division of Standex, Inc., has been in the COM business for 12 years. Standard Data is using Datagrafix technology — older equipment that has been upgraded a number of times over the years, Baker said.

"When TRW came on-site, they didn't have a lot of hands-on experience with our type of equipment," he noted, adding that the laptops allowed it to create an analytical database based on Standard Data's old customer service records and observations recorded by previous customer service representatives.

Blaha said that the CAIS package has assisted TRW technicians in four major areas:

- Diagnosing problems related to the camera and other parts specific to COM equipment.
- Providing the ability to call up adjustment procedures.
- Storing individual machine configurations in conjunction with the customer's name and machine serial number.
- Logging each service event and the number of preventative maintenance inspections and making suggestions as to the appropriate repair requirements.

TRW technicians *travel with Toshiba 3100 laptops*

"Using the system's historical tracking facilities, we have been able to reduce the number of incorrectly ordered repair parts by about 20%," Blaha said, adding that a CAIS system reduces the mean time it takes to repair the equipment. "It's like having a trained technician working alongside you."

Consequently, TRW hasn't had to increase the number of service representatives currently in the field. "The service technicians also spend less time telephoning back and forth for specific repair procedures — it'a all logged onto the system," Blaha said.

Baker referred to the equipment as a hybrid — part computer and part mechanical — contraption: "Where else do you start with a computer tape and finish with a piece of cut film, 4 by 6 inches, that lists 208 data pages?"

Rosh is responsible for maintaining the software for TRW, and a Rosh representative from the San Francisco Bay area spends a day or two each month with the TRW field technicians, answering questions and resolving any minor problems that may have cropped up in the interim. According to Blaha, the vendor updates the package about three times per year.

Blaha'a staff initially spent two weeks training at Rosh headquarters in Needham, Mass., and he indicated that the product has an easy-to-learn framework. "Once you learn the basic structure of the system, you've got it," he said. "There are no unpleasant surprises."

TRW currently has four Toshiba laptops in the field, each equipped with 1M byte of memory and a 20M-byte hard drive. CAIS product pricing varies depending on user specifications.

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NEW PRODUCTS

Software utilities

Lasergo, Inc. has announced an updated version of its Goscript software package.

Version 3.0 allows users to preview their Postscript language print files by drawing their text or images in full-screen mode on an IBM Enhanced Graphics Adapter- or Video Graphics Array-compatible color monitor. It also enables users to export to Tag Image File Format and provides a menu-driven interface.

A 13-font edition of the product sells for $149; a 35-font edition, dubbed Goscript Plus 3.0, costs $299.

Lasergo
Suite A
9369 Carroll Park Drive
San Diego, Calif. 92121
619-450-4600

Spreadsheet Solutions Co. has announced a spreadsheet add-in designed for Lotus Development Corp.'s 1-2-3 Releases 2.0, 2.01, 2.2 and 3.0.

@Ease Set of Six incorporates six features from @Ease, a Lotus add-in. The product features what-you-see-is-what-you-get summing, the ability to center titles over a range of columns, calculation of subtotals and grand totals of ranges, the ability to repeat a character in a cell up to one unit less than the cell's column width, a date identifier and calculation of the sum of the columns in a range.

The suggested retail price is $60, and corporate site licenses are available.

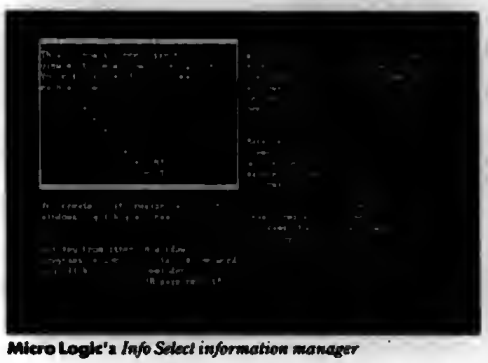
SSC
600 Old Country Road
Garden City, N.Y. 11530
516-222-1429

Software applications packages

Evolution Computing has announced Fastcad 3D, a three-dimensional software package for computer-aided design users.

The product is written in assembly language and requires an IBM Personal Computer AT, Personal System/2 or compatible. It runs on DOS Version 2.0 or higher and requires 640K bytes of random-access memory. It is being bundled with Pixar's Photorealistic Renderman software package and is slated to begin shipping in the second quarter for $2,995.

Evolution Computing
Suite 106
437 S. 48th St.
Tempe, Ariz. 85281
602-967-8633



Micro Logic's *Info Select information manager*

Micro Logic Corp. has announced a personal information manager that enables users to choose random bits of information for several applications.

Info Select is an optionally memory-resident software package that includes a free-form window enabling users to enter information with one keystroke. It can store up to 32K bytes of notes per window and 10M bytes per database, according to the vendor.

The product can run on Intel Corp. 8088 to 80386-based IBM Personal Computer ATs, Personal System/2s or compatibles with a single floppy or hard disk. It is being offered for an introductory price of $100 with a 30-day money-back guarantee when ordered from Micro Logic.

Micro Logic
P.O. Box 70
Hackensack, N.J. 07602
201-342-6518

Software Horizons, Inc. has unveiled Version 2.0 of OI-2000, its operator interface software package.

OI-2000 Deluxe includes proportional text and freehand drawing pixel graphics applications. Several programmable controller drivers are offered for observing and modifying information.

A complete software package, including screen generator, PLC driver and report generator, sells for $750.

Software Horizons
44 Mall Road
Burlington, Mass. 01803
617-273-4711

Unix software

Mark Williams Co. has introduced a Unix-compatible operating system designed for IBM Personal Computer AT and compatible Intel Corp. 80286- and 80386-based machines

Coherent can be installed in less time than Unix, operates more than 2½ times faster and includes a kernel of 64K bytes, the vendor said. It comes with a complete C development environment, including a C compiler and nearly 200 commands, for such functions as text processing and program development. The system costs $100.

Mark Williams
601 N. Skokie Highway
Lake Bluff, Ill. 60044
708-689-2300

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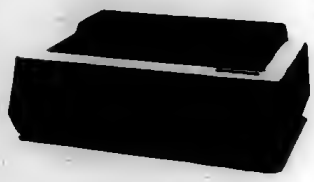

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Why Compaq will never build

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Before creating anything, we start with a clean slate, and talk to personal computer users like you.

That's the reason why every COMPAQ personal computer product has been designed to deliver on a simple promise: to simply work better. This approach is what makes our high-performance PCs different from all others.

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It starts with you. Before we design our products, we sit down and talk with computer users like you. To see what you want. And what you need.

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A powerful example of this thinking is the COMPAQ SYSTEMPRO PC System. It brings an unprecedented combination of performance and expandability to connected environments.

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COMPAQ 486, 386, 386SX and 286 products are designed to deliver the high-performance difference.

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"View from the Front Lines"

Users speak out on their alliance with IS

In business today, the drive for success is affecting all functions within the corporation. With the corporate information system having a greater impact on the business goals of increasing productivity, competitively positioning the company and producing bottom line profitability, IS finds itself working very closely with end users. But how do the users feel about this alliance?

"View from the Front Lines"
A survey on the state of the IS/user alliance today.

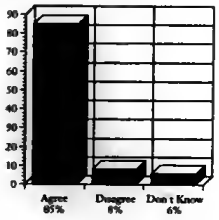
Computerworld went in search of user opinion and commissioned a unique survey among 2500 end user managers in large U.S. corporations. Selected at random these managers represent a cross section of all major business functions: accounting/finance; marketing/sales, administration/human resources, engineering/research and development and manufacturing/operations.

Their views on the IS/user alliance may well be surprising to some. User department managers report an increasingly positive relationship with IS — over 85% believe the IS function is critical to their company's future. And a majority of them feel their IS organization responds effectivly to their needs.

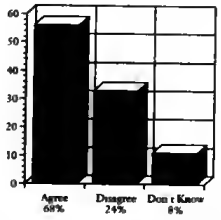
The IS/user Alliance
An increasingly united force for achieving success.

Clearly end users today are more aware of what they gain in forming a close alliance with their IS group. They have a greater understanding of information technology as a tactical weapon in achieving bottom line success. And to use this weapon, users are aligning themselves even more closely with the group responsible for acquiring and implementing information technology — IS.

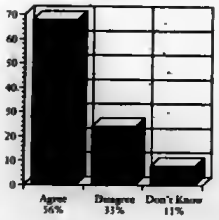
"Information systems are the key to competitive advantage in the 1990s."



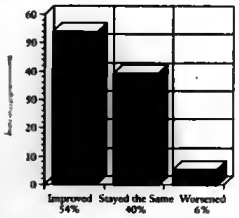
"The IS department responds effectively to user needs."



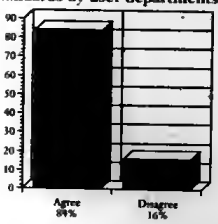
"The IS department does a good job of communicating with with us."



"How has your department's relationship with IS changed during the past two years?"



"Among those companies with standards for brands of computer products purchased (80%), there is wide agreement with these standards by user departments."



Source: "View from the Front Lines," Computerworld User Department Survey. Conducted by IDG Research Services, January 1990.

A brochure, "View from the Front Lines," provides detailed information on this timely and candid user survey. Contact your *Computerworld* sales representative for your copy.

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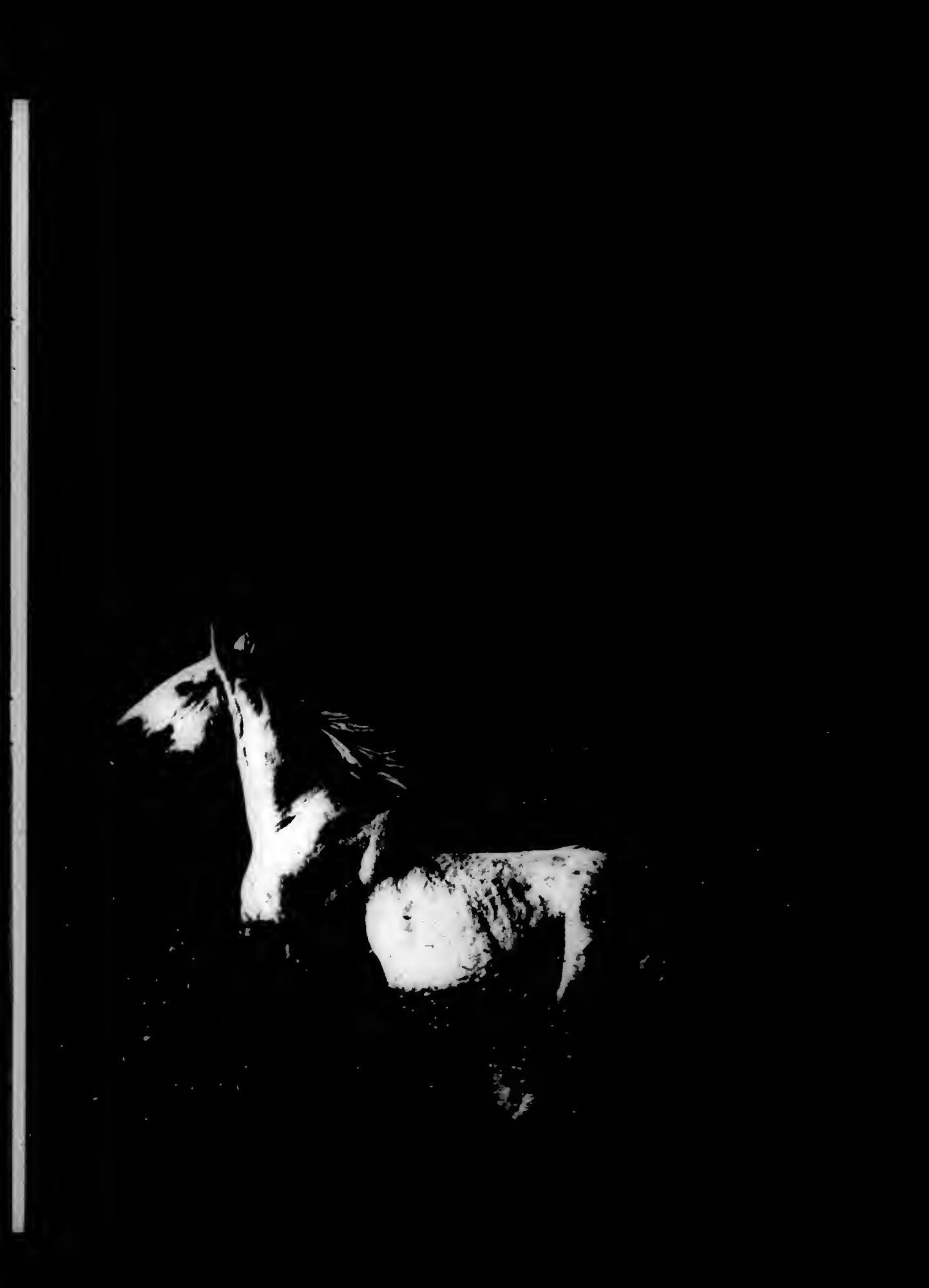

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F O R T H E 9 0

CA90s

COMPUTER ASSOCIATES

DATA STREAM

Walter Ulrich

E-mail is growing up

The electronic messaging perestroika of the last five years has created unrest and instability for communications managers. They are responding by rethinking and revising their messaging strategies and architectures.

The pre-perestroika model for electronic messaging had a single electronic mail host. Users shared a common interface. They exchanged messages by linking to the host where messages were stored for forwarding to their recipients. Compatibility and growth were simple.

Now users exchange messages between dissimilar systems from workstations connected to local-area networks. The new messaging model is the peer-to-peer network.

Electronic messaging perestroika is the inescapable result of technology changes in the past five years. The proliferation of LANs offers users the E-mail benefits that are unavailable with most host-based systems. LANs offer so much local power — and freedom — to the users that it would take a computer KGB to suppress LAN E-mail usage in the provinces.

Continued on page 64

Microcom christens LAN bridge family members

BY JOANNE M. WEXLER
CW STAFF

NORWOOD, Mass. — Microcom, Inc. carved a few new niches in the burgeoning bridge market last week with additions to its Microcom LAN Bridge (MLB) family that include products for linking local-area networks over Integrated Services Digital Network (ISDN).

The MLB/5500 ISDN bridge, which analysts say is the only such animal in the marketplace, connects two geographically separate LANs over Basic Rate Interface ISDN lines. Basic Rate lines are currently offered on a limited basis by the local telephone companies (see chart) and provide two 64K bit/sec. channels for transmitting voice or data and a 16K bit/sec. channel for signaling.

For the past two years Microcom has offered a limited-function prototype card from a third party. The reason Microcom's ISDN product may currently be alone in the marketplace is that ISDN is not yet widely deployed, but the firm could drive ISDN usage by offering an application.

"The [current ISDN bridge] market is slightly greater than zero," said Michael Howard, president of Infonetics Research Institute, Inc., a consulting firm in San Jose, Calif. He added, however, that Microcom is "going with the people who are going to make ISDN happen" by developing the bridge in concert with the regional Bell operating companies (RBOC).

ISDN here, not there

Telephone company progress in supporting ISDN will spur the internetworking over ISDN but varies from region to region

	Number of Telephone Lines Installed (In thousands)				
	1988	1989	1990*	1991*	1992*
Ameritech	7	33	44	65	88
Bell Atlantic	0.6	4	14	29	63
Bellsouth	2	4	331	821	1,051
Nynex	2	8	23	29	32
Pacific Bell	–	0.1	5	9	15.5
Southwestern Bell	12	17	29	40	50
US West	19	33	46	50	54
Total RBOCs	42	98	493	1,043	1,354
Total Independent & RBOCs	43	100	500	1,120	1,400

*Projected

Source: Dataquest

CW Chart: Paul Meck

The RBOCs are one impetus behind the proliferation of ISDN — an emerging set of standards for a ubiquitous digital-switched network — that is dependent on the RBOCs upgrading their central-office equipment to handle ISDN.

Microcom's ISDN bridge has been certified with Illinois Bell, which has about 20 ISDN switches installed, according to Eugene Chang, Microcom's MLB senior product manager. The bridge costs $9,198 for linking Ethernet sites and $9,498 for token-ring environments.

Microcom has also enhanced its product line with the MLB/6500 X.25 bridge and a network management system — based on the popular Simple Network Management Protocol (SNMP) for Transmission Control Protocol/Internet Protocol networks — that reportedly allows the remote monitoring and control of MLBs from a central location. The Microcom Management Station is composed of software installed on an IBM Personal Computer or compatible with an Intel Corp. 80286 processor and a LAN card.

"MIS managers want an open platform for network management, and SNMP support gives

Continued on page 64

Telwatch peers out of networking crowd

BY ELLIS BOOKER
CW STAFF

NEW ORLEANS — Adding its own entry to the increasingly crowded pack of integrated network management systems, Telwatch, Inc. introduced Netexec at the International Communications Association show last week.

Like several other vendors, Telwatch, based in Boulder, Colo., will use a Unix platform for its offering, which will be implemented on Sun Microsystems, Inc.'s Sparcstation. Ameritech announced this year that it had selected Netexec as the foundation for its Ameritech Network Management product.

The initial release of the system will include an SQL-based configuration management database and a fault management system application.

Telwatch said its system can be used as an umbrella control system for private voice and data networks or as a subsystem under other integrated packages like AT&T's Accumaster Integrator, IBM's Netview or Digital Equipment Corp.'s Enterprise Management Architecture.

Telwatch also said Netexec will support proposed Open Systems Interconnect-based systems using the Common Management Interface Protocol.

For the speedy creation of interfaces to various network elements or element management systems, Telwatch said it has created the Device Interface Toolkit, which uses expert system technologies to draw raw data from other systems and present them in a common format.

Prices for Netexec range from $65,000 to $250,000.

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- *network support*

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AT&T lets fly 384K version of Accunet

BY ELISABETH HORWITT
CW STAFF

BASKING RIDGE, N.J. — AT&T recently announced the long-expected 384K bit/sec. version of its Accunet Switched Digital service, which could provide users with an economical alternative to the current offerings — dedicated T1 lines or multiple switched 56K bit/sec. lines.

However, two users of AT&T's existing Accunet Switched 56 service said they will wait for the carrier to announce rates for the 384K version before they stand up and cheer.

"Off the top of my head, the service would have the most utility as a backup to high-speed dedicated links running around our corporation," said Donald Augustine, telecommunications director at McDonnell Douglas Corp.

The aerospace company might also use the service to supply on-demand, high-bandwidth connections for setting up videoconferences and exchanging graphics and data with business partners, he added.

However, before making any judgments, Augustine said he needed to know "how long it takes to bring the service up, what do you have to do to make your equipment compatible, and what's the cost?" McDonnell Douglas currently uses a Picturetel, Inc. videoconferencing system that reportedly achieves quality that is comparable to 384K bit/sec. systems over a pair of 56K bit/sec. lines.

AT&T's new service "does open up a realm of opportunities to us, such as LAN-to-LAN links, computer-to-computer batch types of applications and disaster recovery," said Virgil W. Palmer, manager of corporate telecommunications planning for Air Products and Chemicals, Inc.

In the area of videoconferencing, however, Palmer said that the price would have to be right for his firm to upgrade to the new service from its current dual 56K bit/sec. switched connections.

International deployment of "Accunet-like" high-speed switched services is becoming a high priority for Air Products, along with "hundreds of other customers," Palmer said.

ISDN intelligence

AT&T's new service makes use of the intelligence of the Integrated Services Digital Network (ISDN) D channel and Signaling System 7 protocols to set up calls, said AT&T district manager Walter Suski. As a result, customer premises equipment must support an ISDN Primary Rate Interface to access the service, he added.

AT&T is planning to roll the offering out in 29 service nodes in the third quarter. No time frame for an international rollout was given. Pricing was also unavailable.

Also announced last week by AT&T were the following:

- Accunet Reserved Digital Service now allows users to preallocate 384K and 768K bit/sec. bandwidth for a set time of day. Previously, the service only reserved 1.5M bit/sec. connections. The cost of a reserved 384K bit/sec. connection over 100 to 500 miles is $56.25 for 30 minutes, while the cost of a comparable Reserved T1.5 connection is $100, AT&T spokesman Ralph Andreotta said.
- The Accunet Information Manager will allow customers to open trouble tickets on ailing Accunet T1.5 circuits by communicating directly with the carrier's control centers. Users can also electronically monitor AT&T's progress from a personal computer or Accumaster Integrator workstation.

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BIT BLAST

Netwise works on real-time RPC

Netwise, Inc. and **Concurrent Computer Corp.** said earlier this month that they will codevelop real-time processing-oriented versions of Netwise's remote procedure call (RPC) product for Concurrent's Unix and proprietary platforms. RPCs permit an application to use computing resources remotely on a network.

Price reductions of about 15% have been announced by **Vitalink Communications Corp.** for its remote Ethernet bridges and remote Ethernet bridge/routers, effective immediately.

Under an agreement announced last month, **Nynex Information Solutions Group** has become a Sun commercial systems integrator and will custom-design and install **Sun Microsystems, Inc.** Scalable Processor Architecture workstation-based networks.

A new data connectivity company, **Harris Adacom**, has been formed as the result of an acquisition by **Adacom Corp.** of **Harris Corp.**'s Data Communications Division in Dallas. The new company's product line will connect personal computers, terminals and printers to IBM mainframes and Digital Equipment Corp. and Hewlett-Packard Co. minicomputers.

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a flexible board.

IRMAtrac Token-Ring. Coming soon from DCA.

Ulrich

CONTINUED FROM PAGE 61

Response time is excellent. Messaging within the work group is simple and easy to use. The cost for local messages is cheap. The LAN messaging utility often integrates smoothly with the users' personal computer environment.

The new approach threatens to disrupt the LANs' ability to communicate across work-group boundaries. Often, LAN E-mail systems have been adapted by their user community, rendering them incompatible with other systems.

Before, users had broad interconnectivity, but the systems were unfriendly, unresponsive or uneconomical. Now, they have systems they want to use but have sacrificed interconnectivity. The problem falls like a hot potato into the unwelcoming lap of the corporate communications manager.

He must provide seamless connectivity among users, while preserving as much of the investment and performance of the E-mail LAN as possible. This problem has tentacles, each of which can be expressed as a question:

- Do the LAN E-mail utilities that users have adopted have the features, flexibility and future enhancements to be enduring solutions?
- How should LANs be interconnected with each other and the central hosts?
- How do you provide messaging outside the organization both domestically and internationally?
- How do you manage directories and simplify addressing?
- Can adequate messaging privacy and security be provided?
- What are the administrative and training costs?

The standards and underlying technology to address these questions exist. Certainly, there are bridges, routers and gateways galore. Standards including X.400 and X.500 offer partial solutions today and promise more complete solutions in the future. However, tying all the pieces together harmoniously is a complex task, daunting to undertake and difficult to complete.

It is a task that the communications manager must undertake. Leadership is required now so that continued expenditures by users in messaging systems, software, applications and user experience are investments in the future rather than dollars down the drain.

In summary, there is a clear trend. The electronic message model is shifting from star to peer-to-peer. LAN-based messaging will continue to grow in volume. This, in turn, provides powerful benefits for the end user but can complicate connectivity and throw the communications manager into a series of tough trade-offs. This complexity raises several troubling questions that must be addressed in rethinking the electronic messaging strategy and infrastructure. The time to rethink is now.

Ulrich is client services director for the information and telecommunications systems consulting section in the Los Angeles office of Arthur D. Little, Inc.

Etherpeek tries to snuff Sniffer

BY JIM NASH
CW STAFF

A doctor diagnosing patients routinely uses a stethoscope before a CAT scan. Information systems managers are beginning to adopt that same principle in analyzing the health of their local-area networks. Those not needing powerful analyzers — such as Network General Corp.'s Sniffer — that can cost as much as $20,000 are looking for economical alternatives.

Dr. Steven Erde at Cornell University's medical college said he found that Sniffer's price and performance were overkill for his department, which is dominated by Apple Computer, Inc.'s Macintosh. Erde, who heads up the college's Pathmac Laboratories, uses an Ethernet LAN to transmit digital imagery.

Erde opted for Etherpeek, a Macintosh- and Ethernet-based networking software package developed by Avant Garde Group in Walnut Creek, Calif. Etherpeek, announced last month, runs on the Macintosh II and SE/30 with the appropriate Ethernet cards and costs $475.

Erde said that Etherpeek's price and a few "subtle features" sold him. One such feature is the software's ability to capture packets and display them in real time.

That feature, and the ability to display multiple packets simultaneously, attracted Mark McCahill, manager of the microcomputer and workstation network center at the University of Minnesota. McCahill purchased Etherpeek earlier this month.

"When it captures a packet or datagram," he said, "you can display several packets in several windows. With the Sniffer, we had to print [each display] or jot it down on a piece of paper."

Ironically, it is this multitasking capability that gives McCahill doubts about Etherpeek. "There are some unresolved performance questions," he said. "It is not optimized for capturing every single packet on really, really busy networks."

McCahill explained that although he has seen no evidence of the software missing occasional packets, "some modes you run it in are modes in which the multiprocessors are doing other tasks simultaneously." That strain might lead to an errant lapse on busy networks.

Erde said he was not discouraged to learn that the software lacks some of the breadth of its competitors. "Etherpeek doesn't break down or interpret the Appletalk protocol to the same level as Sniffer," he pointed out, but his needs do not often include in-depth analysis. McCahill agreed, noting that "damaged datagrams or noise on a network can only be seen with Sniffer. But I can live without that [capability]."

The software's user interface won over most of McCahill's technicians. They had been borrowing the university's Sniffer about every five weeks, he said, and they had had difficulty remembering its cumbersome commands.

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Microcom

CONTINUED FROM PAGE 61

them a warm, fuzzy feeling," noted Dave Perro, an industry analyst at Dataquest, Inc., a research firm in San Jose, Calif.

Analysts pointed to Microcom's data compression techniques and link-to-link error-checking functions as points of differentiation in a crowded internetworking market.

"Microcom's compression bridges cut in half or a third the number of bytes you have to move. This means you can use a slower-speed line or move more traffic over the same line," Howard noted. He explained that this is particularly significant in remote communications, which require more expensive channels and are more error-prone.

Microcom is also one of the few players in the token-ring-to-token-ring bridge market. In addition, the company markets Ethernet-to-Ethernet versions of its bridges.

Other enhancements to Microcom's entire bridge line include support for the Spanning Tree Protocol, which ensures a loop-free topology in an extended bridge network, load balancing and enhanced filtering options.

Hot market spurs alliances

The ripe market for products that interconnect local-area networks should grow 40% per year over the next several years, according to Forrester Research, Inc., a Cambridge, Mass., market research firm. This market includes bridges, routers and smart hubs — modular wiring concentrators that link desktop computers on different networks over various media.

Many vendors want a piece of the action and are striking up alliances with firms that have router expertise. Witness a recent agreement between Cabletron Systems, Inc. and Cisco Systems, Inc. to integrate Cisco's router technology into Cabletron's intelligent hub products. Cisco and Chipcom Corp. also said last month they will codevelop a modular version of Cisco's multiprotocol routing technology and integrate it into Chipcom's Online System Concentrator.

Hewlett-Packard Co. and Wellfleet Communications, Inc. have closed a deal allowing HP to resell Wellfleet's multiprotocol routers and access Wellfleet software technology for product development. "We want to provide all the pieces of an enterprise LAN integrated with network management," HP product manager John Watkins said.

Dave Perro, an analyst at San Jose, Calif.-based Dataquest, Inc., noted, "It is difficult to quickly develop routing expertise in-house — that's the impetus for companies to go out and buy routing technology. These alliances allow vendors to consolidate bridging, routing and network management in one box and spare customers from having to go to several vendors."

JOANIE M. WEXLER

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NEW PRODUCTS

Diagnostic equipment

Silicon Graphics, Inc. has announced a diagnostic tool that offers real-time feedback of network traffic and topology.

Netvisualyzer includes a graphical interface that reportedly allows network administrators to acquire and display network data on a Silicon Graphics Iris computer without a dedicated system or special hardware.

The tool can be used to monitor traffic among gateways, routers or hosts, and its network analyzer can diagnose protocol-related problems, the vendor said.

Netvisualyzer costs $3,000 and is slated to begin shipping late next month.

Silicon Graphics
P.O. Box 7311
2011 N. Shoreline Blvd.
Mountain View, Calif. 94039
415-960-1980

Wide-area networking software

Connections Telecommunications, Inc. has introduced a wide-area data network design tool.

Netconnect can design networks that integrate voice and broadband imaging with data. The product also enables users to optimize topology, performance and pricing of Systems Network Architecture (SNA), X.25 and hybrid networks.

Base modules of Netconnect range from $20,500 for a version that does peer-to-peer or X.25 designs to $27,500 for a version that designs SNA, X.25 hybrid or integrated data, voice or image networks.

CTI
15 Christy's Drive
Brockton, Mass. 02401
508-584-8885

Gateways/ Bridges/ Routers

Cisco Systems, Inc. has announced that its internetwork routers can interconnect geographically remote IBM Token-Ring networks over wide-area network backbones by using IBM's source route bridging protocol.

Source route bridging operates concurrently with the multiprotocol routing capabilities already offered by Cisco's routers, thus allowing users to route interlocal-area network traffic using several industry-standard protocols.

Prices range from $925 to $1,800 per unit, depending on router chassis size.

Cisco
1525 O'Brien Drive
Menlo Park, Calif. 94025
415-326-1941

Solutions, Inc. has introduced Commgate, an MCI Communications Corp. MCI Mail gateway for Microsoft Corp.'s Microsoft Mail.

The gateway enables users of Apple Computer, Inc.'s Macintosh or MS-DOS workstations to access MCI Mail's delivery by facsimile, telex and courier services.

Commgate runs on a Microsoft Mail server with a minimum of 2M bytes of memory and requires Microsoft Mail 2.0. It is scheduled to ship late in the second quarter at a price of $595.

Solutions
P.O. Box 783
30 Commerce St.
Williston, Vt. 05495
802-865-9220

Gandalf Data, Inc. has introduced its Access Server, part of a family of modular, interchangeable platforms that link terminals and hosts in local- and wide-area networks.

The server was designed for mixed CPU environments. It can connect terminals to hosts via Ethernet LANs that support the LAT protocol and Transmission Control Protocol/Internet Protocol, the vendor said.

The product is slated to begin shipping next month for $8,200.

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MANAGER'S JOURNAL

EXECUTIVE TRACK

Patricia A. Richert has been appointed vice-president and chief information officer at **Mark IV Industries, Inc.**, a Fortune 500 diversified manufacturer in Williamsville, N.Y.

Richert, a 17-year Mark IV employee, has been manager of information systems since 1982. She joined the firm's Lustreprint division in 1973, moved to the corporate office in 1974 and has since held various positions in IS.

Richert holds a bachelor's degree in accounting from the University of Buffalo.

Mayflower Transit, Inc. in Indianapolis announced three promotions in its MIS department.

Janice Smith was promoted to director of systems development services. She has more than 15 years of experience at Mayflower, with responsibility for implementing systems in the special transportation systems and household goods operations.

Charles Berning was promoted to director of technology and production services. He has been largely responsible for the Computerized Agents Information Network (CAINS), which links Mayflower and its nationwide agents.

Ellie Hashman has assumed additional responsibilities as director of technology deployment services. Mayflower's data entry, end-user computing, agency support and CAINS training functions will now report to her.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

Have IS skills, will travel

State Department's Franke immerses himself in culture, cuisine — and computers

BY RICHARD PASTORE
CW STAFF

Looking at Woody Franke's dog-eared passport, one could correctly guess that he is more excited about traveling and exploring foreign cultures than he is about managing minicomputers at the U.S. Embassy in Paris.

"I joined the State Department a little over a year ago primarily from a desire to travel," says Franke, the embassy's systems manager. "I enjoy the history, the language, the food — just about everything cultural having to do with another country."

His first embassy assignment has landed him in the heart of Paris, mere steps from the Place de la Concorde, site of public beheadings during the French Revolution's Reign of Terror. Today, it is a sprawling square decorated with a fountain and lined with pleasant sidewalk cafes.

This history-steeped setting is most appropriate for Franke, 47, a Houston native who says he enjoyed his history classes more than his math-major courses at the University of Houston.

However, the peculiar challenges of working for the U.S. State Department leave little time for thoughts of history or cafes during working hours.

Franke and his staff of seven oversee the systems that process unclassified information at the embassy. More than 350 users scattered throughout Paris and consulates in four other French cities use the systems primarily for budgeting, personnel and financial applications, as well as generating the flood of official cables that flow to Washington, D.C.

The department's primary tools are five Wang Laboratories, Inc. VS minicomputers. Other than the occasional personal computer purchase, however, Franke has little say in hardware matters. The Wang systems and networking infrastructure are dictated by a U.S. government contract.

Franke's hands are also somewhat tied when it comes to applications. "The applications are written in Washington on the VS and sent to the embassies," he says. "The problem is, they don't always meet every post's needs."

This can be frustrating, Franke says. "We have the capability to modify some packages to suit our needs, but we're not really allowed to," he says. Although they cannot change the applications, Franke's programmers develop adjunct reporting systems for preparing data such as personnel reports for the French government.

Even if he had leeway to implement far-reaching systems changes, however, Franke would not be able to see them come to fruition. His embassy tour of duty will be over in two years, at which time he will be assigned to another post in another country.

"Every three or four years, you have 100% turnover in management, so you don't get to see the results of your work," Franke says. "I'm trying to get a new computer room built, and it may be completed after I leave."

Continued on page 74

PROFILE: Woody Franke

Steve Hurwitz/Stringer

Position: *Systems manager, U.S. Embassy, Paris*
Mission: *To oversee the systems that process unclassified information for budgeting, personnel and financial applications*

More management, less systems at ASM

BY CLINTON WILDER
CW STAFF

In a profession where change has become a way of life, a professional association must also change in order to survive. The Association for Systems Management (ASM) is trying to do just that.

After a year of financial difficulties, declining membership and the resignation of former Executive Director David Sturtevant, ASM knows that it faces some difficult challenges. At the annual ASM conference earlier this month in Atlanta, ASM's new president issued a call for the group and its members to make sweeping changes.

"At no time in this organization's history has it been more critical for it to establish a vision and direction to assist its members in preparing for the forces of change that will impact their work life," International President Scott J. Beltz told about 700 ASM members in attendance.

Beltz said that ASM must augment its traditional focus on technology issues with educational programs to enhance members' business, management and communications skills. Successful information systems professionals in the 1990s "will draw upon the traditional skill set of the profession, plus a broader base of cross-disciplinary knowledge," said Beltz, a manager at Extended Systems in Boise, Idaho.

In order to survive, Beltz said, ASM must face three dramatic changes in its traditional membership base: the aging of that base; the elimination or realignment of positions traditionally held by ASM members as corporations look increasingly to downsize or outsource IS operations; and the advent of technologically savvy users with whom systems professionals must communicate.

"Without the ability to effectively identify and articulate the impact these events will have on this profession, our days may be numbered," Beltz said.

Beltz concluded that if ASM fails to meet the challenge of change, it will have only itself to blame. "It is painfully evident that we are in control of our own fate," he said, alluding to Pogo's famous line: "We has seen the enemy, and the enemy is us."

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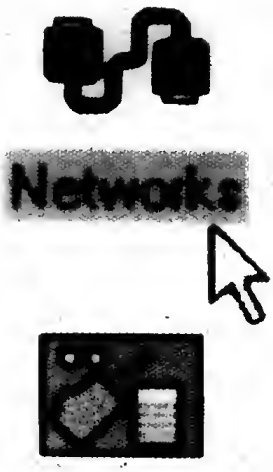

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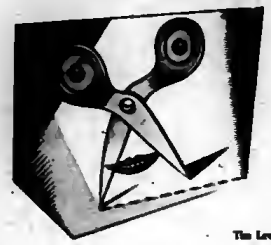

Tim Lewis

Summaries from leading scientific and management journals

Journal of Information Systems Management

Spring 1990

"Implementing an Executive Information System: Seven Steps for Success"
By Craig Barrow

■ The following are steps that can help ensure the successful implementation of an executive information system:

- Designate a sponsor who will understand and support the EIS project but does not necessarily need special technical knowledge. The sponsor will act as the liaison between information systems and executive users.
- Keep the system simple and appropriate to the user's sophistication level and needs without sacrificing system capability for more technical users.
- Encourage active participation in the evolution of the EIS, keeping users informed about how it can help make their jobs more efficient.
- Know what data is needed and how it will be accessed. A rule of thumb is to include the same amount of information that executives receive through written communications and add at least one new element of strategic information.
- Develop a prototype that demonstrates what an EIS can do for the firm.
- Involve users in the new technology to overcome any negative feelings they might have. Active participation by users will encourage a sense of ownership and show them how the system can help them access and monitor critical business information.
- Upon completion, decide where the system will go from there. Preparing for growth is critical.

Sloan Management Review

Spring 1990

"Plugging Into Strategic Partnerships: The Critical IS Connection"
By John Henderson

■ Using technology to gain a competitive advantage takes more than just a hefty investment; the key is how well management integrates the use of the technology infrastructure into the mainstream of the firm. Effective use and delivery of information systems requires a working relationship or partnership between line managers and IS.

The idea of partnership is easily invoked because of the inherent benefits: operations efficiency, financial contribution, knowledge sharing and the quality of work life. However, getting the relationship to actually work can be challenging. There needs to be a mutual understanding of both technology and business practices with little translation necessary if decisions are to be made jointly.

In cases in which such an alliance is in place, line managers have been found to have a heightened attitude toward the strategic role of technology. In a similar manner, IS personnel were more willing to work with line workers when they were exposed to business operations rather than just technology.

Indiana University Institute for Research on the Management of Information Systems

Working Paper

"Computer Abuse and Computer Security Administration: A Study of Contemporary Information Security Methods"
By Detmar Straub and Jeffrey Hoffer

■ Computer abuse is an ongoing problem, a recent study reported, with computer security officers discovering only 8% of such abuse. Thirty-two percent is discovered by accident, 45% through normal system controls and 4.5% by auditors. The study also revealed that 81% of computer abuse is perpetrated by employees within the firm; however, only 10% occurs because of maliciousness on the part of the perpetrator.

What can IS do to deter threats? One way is to set up a computer security administrative function, as follows:

- Develop a plan for security and disaster recovery suitable for the organization.
- Develop and distribute IS guidelines that outline computer operation rules and data ownership.
- Conduct employee orientation programs to communicate organizational policies and penalties for violations.
- Classify information, programs and all vital records.
- Design (or select) and implement security software packages for monitoring and preventing abuse.
- Constantly monitor the effectiveness of security procedures and employee training.

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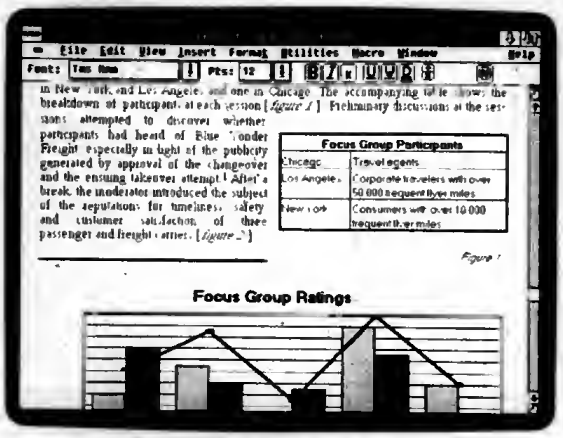

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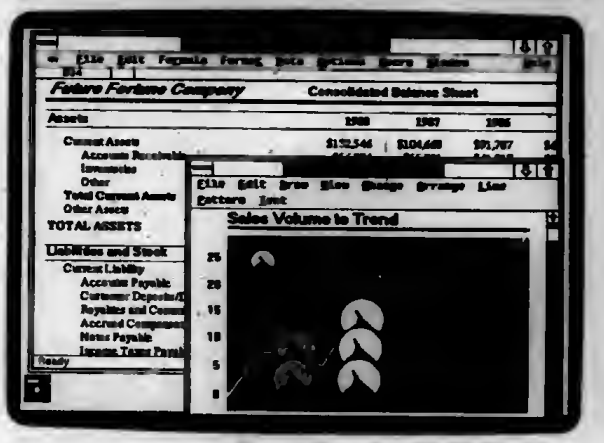

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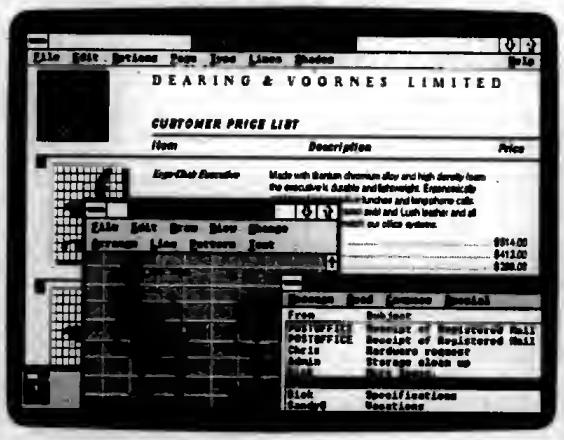

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Franke

CONTINUED FROM PAGE 69

The only continuity at the embassy comes from the foreign service nationals, native French employees who are not subject to the State Department's tour assignment schedule. Franke's information systems staff is composed entirely of foreign service nationals, most of whom speak English.

"They continually have to break in a new manager and new users," Franke says. "They show their American bosses how to do things."

Guy Nolleau, a foreign service national who manages the embassy's computer operations, has seen five IS managers come and go. Nolleau helped familiarize Franke with the Wang systems and the specifics of State Department administration.

"He adjusted quickly because he has been a computer professional all of his life," Nolleau says. "That might not be the case with our next boss, who might be somebody who was processing visas before."

Franke and his wife, Rita, also eagerly embraced French culture, Nolleau says. "They took an apartment in Paris; they are not living in an embassy building where they would only meet American colleagues and nobody else," he notes.

Although Paris is Franke's first State Department stint, he has visited dozens of countries and worked in several as a computer professional. As a systems developer first at Control Data Corp. and later at Computer Sciences Corp., Franke worked and resided in the UK, Saudi Arabia, Iran and Vietnam.

In the course of their travels, Franke and his wife have raised two daughters, now both in their early 20s. Although Rita Franke enjoys traveling, she would prefer to settle down a little longer to complete her college education, Franke says. "She almost had her associate's degree, but then we up and moved over here," he says.

Since his wife also works part-time at the embassy, Franke's security concerns reach beyond his systems and data. There have been terrorist attacks on embassy employees in the past, Franke says. "As a U.S. government employee overseas, you know in the back of your mind that you're marked [as a terrorist target]," he says.

Besides this remote threat, Franke's main concern is the cholesterol count in Parisian food. "We're eating so well here; too much good food and wine," he says. Although he is far from fluent in *Francais*, he has his linguistic priorities. "I know enough French to make dinner reservations," he says.

Can you hack it overseas?

Managing information systems overseas for the State Department or for any other U.S.-based organization has obvious inherent rewards. Before you even apply for a passport, however, you should heed some advice from someone who has been there and back.

"You have to be very adaptable," says Woody Franke, systems manager at the U.S. Embassy in Paris. "You have to adapt not only to different working environments, but to cultures and new workmates."

Someone who is not prepared for that kind of change will have trouble. "We've had a lot of employees that really go through culture shock on their first assignments outside the country," says Tom Robinson, president of Computer Sciences Corp.'s (CSC) systems international division. Robinson supervised Franke's overseas projects when he worked for CSC.

"Woody's more comfortable with that role," Robinson says. Because of Franke's ability to adapt, "he's the kind of guy we use when we do an overseas assignment."

However, even Franke has run afoul of the most obvious cultural pitfall — the language barrier.

"The language is difficult," Franke says. Though he is taking French lessons, he often regrets not being fluent, he admits.

Managers stationed overseas can also feel isolated from the mainstream world of IS. "Sometimes you feel you're out of touch this far away," Franke says.

His State Department bosses bring him to Washington, D.C., every two years for a series of IS seminars. "We also have a yearly conference of systems managers who get together to exchange ideas," he says.

In most parts of Western Europe, good systems employees are not hard to come by, Franke says. However, considering the State Department's budget, "the problem is keeping our salaries on par with Western Europe's," he notes.

He also says that foreign nationals no longer perceive U.S. embassies to be the prestigious workplaces they were in the years following World War II.

RICHARD PASTORE

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Rebecca Bailin

Learning the right lingo

Let's say there's a new development project that all of the information systems department knows is sorely needed. You are faced with the ugly job of cost-justifying the system to nontechnical management. You wring your hands with more self-pity than a philandering spouse — upper management "just doesn't understand."

Yes, general management is more concerned with the bottom line than with technology; that is as it should be. But IS managers are often frustrated because they don't explain their technical needs in business terms. Worse, this miscommunication can rob a company of great IS benefit or expose it to tremendous risk.

The IS manager's guiding light is simple: Prove that the benefit of the system outweighs the cost. Remember, however, that both benefits and costs are complex. Don't get trapped into thinking in terms of simple dollars. Risk is a cost; competitive advantage is a benefit. Be succinct; cut the jargon and explain what improvements *mean to the business*.

The more specific and detailed you are in describing the business benefits of the system, the more successful you will be in getting funding. If a new system will improve performance, it may be obvious to a technical person that improved performance is beneficial. But what exactly will the improvement do to help the company increase revenue, strengthen its position in the market or minimize its investment in inventory?

Put yourself in management's place. Think about when you were buying a videocassette recorder (assuming you knew little about the technology). It was the picture quality that mattered, not the specs. If you're a Betamax owner, is it any comfort that you've got superior technology when your favorite movie is only available in VHS?

Let's look at various specific business benefits of IS projects.

• **Reduced cost.** Reduced cost is the traditional justification for IS — automate and reduce head count. This argument has gotten weak because head count reductions never really materialized. Organizations didn't necessarily slim down — they found new kinds of work and new ways to do it.

• **Reduced risk.** Reduced risk is a powerful cost justification. The high salaries and extraordinary expertise in any company's finance department are easily justified by reduced risk. A poor financial decision can spell quick bankruptcy.

Yet poor IS systems regularly expose companies to enormous risk. One banking client of ours had many millions of dollars sitting in accounts for several years — *with no security*. Any junior programmer so inclined could have easily realized his or her dreams of avarice.

Another client is currently paying more than 100,000 employees weekly on a payroll system written before the Beatles' first hit — and the source is written in vermicelli code (even less substantial than spaghetti). Every Thursday night, the prayers of the keepers of the payroll system reach a feverish pitch. The prayers have apparently been answered, as the system hasn't significantly failed yet.

What is management's attitude? "If it's not broken . . ."

One can't help but wonder how much more quickly the system would be revamped if IS management detailed the legal implications of late payroll and the true probability of failure. How would a failure affect the company's already delicate relationship with labor?

It is the IS manager's responsibility to become fluent enough in business language to make these risks clear. Get help from other departments in your company. Finance is well-versed in risk analysis; so is legal.

• **Competitive advantage.** Competitive advantage does not have to be mysterious, enormously expensive or even astonishingly innovative. Competitive advantage can accrue from any use of a system to serve customers better, smooth relationships with suppliers or make life more difficult for competitors. In fact, the accumulation of small improvements is more difficult for competitors to imitate than the grand leaps such as automated teller machines.

Track how systems make important customers happier, raise worker morale or aid in sales efforts. Use these metrics to prove the benefits of new systems. Meet with manufacturing, marketing, legal, sales or finance to help you understand how systems benefit the organization and help to generate revenue.

Talking about systems with nontechnical colleagues will greatly enhance your understanding of management's perspective. Remember that all measures of cost and benefit need not be quantitative — anecdotal evidence is powerful, too.

If you're convinced that a new system's benefits outweigh its costs, don't be timid — state your case in compelling business terms.

Bailin is a principal at Kuvera Associates, a Redmond, Wash.-based consulting firm specializing in distributed computing.

To find out how easy it is to convert DCA's new IRMA from standard to MCA bus, flip the page.

CALENDAR

The Electronic Data Interchange Association will hold its Second International Congress of EDI Users conference, "EDI and the International Marketplace: Countdown to the 21st Century" in San Francisco, July 16-18.

The conference will feature speakers from all over the world who will discuss EDI in North America, Europe, Eastern Europe and the Pacific Rim; the global business environment of the 21st century; marketing EDI internally and to trading partners; and international EDI standards.

For more information, contact the International Congress Registrar at EDIA, Alexandria, Virginia, (703) 838-8042.

JUNE 3-9

Conference '90: The Transformation of American Business. Cleveland, June 8-9 — Contact: Cleveland Chapter of the Data Processing Management Association, Cleveland, Ohio. (216) 261-9727.

JUNE 10-16

Association of Data Communications Users 1990 National Conference. East Brunswick, N.J., June 10-13 — Contact: ADCU, Bloomington, Minn. (612) 881-6803.

Harnessing Technology: A Blueprint for Service Excellence. Montreal, June 11-13 — Contact: LOMA, Atlanta, Ga. (404) 951-1770.

The Telecommunications Evolution: Charting the Course. Nashville, June 12-15 — Contact: Telco Research, Nashville, Tenn. (615) 255-8400.

Global Communications Worldwide Connectivity Strategies. Washington, D.C., June 14-15 — Contact: Infoline, New York, N.Y. (212) 557-3400.

JUNE 17-23

International Joint Neural Networks Conference. San Diego, June 17-21 — Contact. Meeting Management, San Diego, Calif. (619) 453-6222.

Symposium on Image Conservation. Rochester, N.Y., June 17-20 — Contact: SPSE, Springfield, Va. (703) 642-9090.

IBM Users Computer Security Conference and DEC Users Computer Security Conference. Orlando, Fla., June 18-20 — Contact: Computer Security Institute, Northboro, Mass. (508) 393-2600.

PC Expo. New York, June 18-21 — Contact: H.A. Bruno, Inc., Englewood Cliffs, N.J. (201) 569-8542.

Association for Computing Machinery Sigplan '90: Programming Language Design and Implementation. White Plains, N.Y., June 18-22 — Contact: Mark Scott Johnson, Sun Microsystems, Mountain View, Calif. (415) 336-7758.

Business Opportunities in the Hospital Computer Market. Chicago, June 19-20 — Contact: Randy Levy, Sheldon Dorenfest & Associates, Northbrook, Ill. (708) 272-0308.

Netucon '90. San Jose, Calif., June 19-20 — Contact: Tom Thibault, NCNUA, Walnut Creek, Calif. (415) 944-9500.

Pace '90. Orlando, Fla., June 19-21 — Contact: Pace '90, Houston, Texas. (800) 888-2188.

Software Quality Engineering from the User's Perspective. College Park, Md., June 19-21 — Contact: University of Maryland University College, College Park, Md. (301) 985-7206.

Advanced Technology Workshop. Nantucket, Mass., June 20-22 — Contact: International Society for Hybrid Microelectronics, Reston, Va. (800) 232-4746.

Information Engineering Forum '90. Washington, D.C., June 20-22 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8305.

Strategies of Developing High-Performance Documentation. Waltham, Mass., June 20-22 — Contact: Information Mapping, Waltham, Mass. (617) 890-7003.

Interactive Technology Seminar. Athens, Ga., June 21-25 — Contact: Dr. C. Hugh Gardner, University of Georgia, Athens, Ga. (404) 542-3354.

JUNE 24-30

Execucom's IPS Users' Association Annual Meeting. Pittsburgh, June 24-28 — Contact: Execucom, Austin, Texas. (800) 531-5038.

Management of Information Technology in Higher Education Program. Boulder, Colo., June 24-27 — Contact: CAUSE, Boulder, Colo. (303) 449-4430.

National Automated Clearing House Association Payments Institute. Boulder, Colo., June 24-29 — Contact. NACHA, Herndon, Va. (703) 742-9190.

Advanced Intelligent Network. Dallas, June 25-26 — Contact: National Engineering Consortium, Chicago, Ill. (312) 938-3500.

American Production and Inventory Control Society 1990 Bar Coding Seminar. Detroit, June 25-26 — Contact: APICS Meetings Registration, Falls Church, Va. (703) 237-8344.

Design for Manufacturability: An Executive Briefing. Cambridge, Mass., June 25-26 — Contact: Kristin McCarthy, Design for Manufacture Alert, Boston, Mass. (617) 232-8080.

Distributed Database in Financial Institutions. New York, June 25-28 — Contact: IBC USA Conference, Natick, Mass. (508) 650-4700.

Empowering the User: The Design of Human-Computer Interfaces. College Park, Md., June 25-27 — Contact: University of Maryland University College, College Park, Md. (301) 985-7206.

Total Quality Management Conference. Washington, D.C., June 25-26 — Contact: TMSA Conferences, Torrance, Calif. (213) 534-3922.

Conference and Exposition on Geographic Information Systems-East. Washington, D.C., June 26-28 — Contact: Conference Manager, USPDI, Silver Spring, Md. (301) 445-4400.

Dexpo East (DEC Computing & Connectivity Exposition and Conference.) Boston, June 26-28 — Contact: Expoconsul International, Princeton, N.J. (609) 987-9400.

Marketing Services Exposition & Conference. New York, June 26-28 — Contact: Eberhard & Co., New York, N.Y. (212) 557-6950.

Midrange World '90. Boston, June 26-28 — Contact: Expoconsul International, Inc., Princeton, N.J. (609) 987-9400.

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The flesh and blood of network planning

BY SUZANNE WEIXEL

Cargill, Inc. has known the strategic importance of network planning since Calvin Coolidge was in the White House. In 1926, Morse code represented the cutting edge of communications technology, and Cargill was using it aggressively to keep its offices across the country in touch. Even then, network planning was considered a key business function, says Reuben Lanttro, director of international telecommunications in charge of domestic and international networks for the Minnesota-based commodities trader and processor.

Sixty-odd years later, Kevin O'Neill, vice-president of network research and consulting at Business Research Group in Newton, Mass., says many companies around the world are beginning to realize how integral an enterprisewide network architecture is to their operations.

Companies are taking a second look at the technologies they have installed and the technologies that are available, O'Neill says, and are "looking for ways to knit them together in an effort to get the most out of their business applications." What they do not always realize, he says, is that "network planning decisions involve procedural decisions that have broad business implications."

According to O'Neill, once a technology is implemented anywhere within a company, it becomes embedded in the way the company does business. The risk involved in changing a network, he says, comes from changing the way the people who use that network do business.

Dixon R. Doll, founder of DMW Group, a worldwide consulting practice based in Ann Arbor, Mich., thinks that an effective network planner must approach enterprisewide integration from three angles:

- **The physical links.** These are the cables, boxes and other hardware connections that actually make up the network.
- **The logical links.** According to Doll, these are the levels of access that define connectivity options in terms of the users.
- **The organizational links.** These enable the other two types of links to support the company's business needs.

According to Doll, when you approach network planning from the organizational angle, you must consider how the network is going to affect the structure of the company.

Even at Cargill, which long ago established a culture in which networks are an indispensable part of the business culture and are constantly being adjusted to support business initiatives, network changes can still produce surprises at the organizational level.

Cargill is engaged in the worldwide acquisition, processing, storage, transportation and merchandising of agricultural and other bulk commodities. It has 50 different business units operating in 55 different countries around the world. With everyone sharing a common network, any network change — no matter how small — is felt by everybody in the company.

One recent network change that brought some unexpected issues to the surface involved the revamping of Cargill's European voice and data communications to support the increase in trade volume that is expected to result from the opening of the European Common Market in 1992.

Lanttro and the communications department determined that it would be necessary to standardize equipment and connect every European location to the enterprisewide network, establishing universal access to some corporate applications, such as human resources, and selective access to product-line applications.

Planning the technical connections was not top difficult; it simply involved extending the domestic network already functioning in the U.S. However, the unique organizational structure of Cargill's European locations brought up some thornier issues.

Internationally, Cargill is organized geographically. Every location supports a number of product lines under the responsibility of product-line managers, and every location also reports to a country manager. It was in trying to superimpose a standard international system on this geographically divided structure that the complications cropped up.

"Physically, product lines are located in the same building, so they should be able to share common systems," Lanttro says. "Business-wise, merchandising cocoa in New York is the same as merchandising cocoa in London or Amsterdam, so they should be able to share common applications."

However, Lanttro adds, a whole new can of worms is opened by the simple question, who's going to pay for network services? Negotiating cost-allocation issues was not included in the network plan.

The technical equipment is

Alvin Upitis

Cargill's Lanttro *says that getting the technical connections right isn't always enough*

Weixel is a free-lance writer based in Framingham, Mass.

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Why IS rules the roost
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Flesh, blood

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purchased by the country in which it is located, and it therefore becomes an asset of that country. But, Lanttro says, it is difficult to trace network usage to equitably allocate the costs of the lines and the line usage.

"Tracking voice is pretty clear-cut. There are lots of tools available for that. Tracking data access and transmission is another story. We just have to try to be fair," Lanttro says.

In addition, if one country pays for software development, it is not always eager to just give an application away.

According to Lanttro, these issues go well beyond the scope of the communications department. "If they can't be worked out on the product or country level, they may end up being settled by top management."

John McQuillan, president of McQuillan Consulting in Cambridge, Mass., says he believes that one of the challenges facing network planners is determining where to draw the line on authority. Given the depth of decentralized technology in most firms today, enterprisewide networking is a lot like a democratic form of government: Local or state governments run their own departments; the federal government runs the corporation, McQuillan says. How much authority can be delegated, and the issues for which the authority can be exercised, must be as carefully planned as the network connections themselves.

Ideally, McQuillan says, the decision-makers at the federal level are there to add value to the system as a whole, giving the local managers autonomy to make their own business decisions. However, he advises, "this kind of arrangement will work only if the rules are laid out in advance. "There should be a federation made up of representatives of several disciplines, and they must work together to support the goals of everyone from top management to the system users," he says.

Networking for growth

Jackson, Miss.-based Deposit Guaranty National Bank developed its own type of federation in response to the pressures generated by an increased dependence on technology, including the implementation of an enterprisewide network.

Unlike Cargill, Deposit Guaranty did not have a long history of networking. The major thrust behind an enterprisewide network was growth. In 1980, the bank had about 60 branches, all of which were located in Mississippi and most in the Jackson area. Now, with 134 branches, it is the largest financial institution in Mississippi and has crossed the state line into Louisiana.

Inherent in the rapid expansion were such business problems as inconsistent customer service, says Wayne Hilliard, vice-president of communications. According to Hilliard, many of the new branches had been independent banks that Deposit Guaranty acquired. They operated under their own policies, using their own systems and their own applications.

As a result, despite the fact that the name of the bank was the same wherever a customer was, operations were far from uniform.

"We were forever explaining why the same type of transaction would take one day in one place and three days in another," Hilliard says.

Top management decided that a backbone network would enable such varied organizations to function as one bank. However, the IS department discovered that in unity there is also headache potential.

"Whenever anyone within the bank wanted technical support, be it for applications development or enhancement or new equipment, they called the DP director," Hilliard says. "It got to a point where the DP director was always in hot water because he was the one setting priorities and making decisions on which division or branch got serviced first."

Dropping the pressure

Foreseeing increased pressure as applications were consolidated and more and more branches were brought on-line, IS suggested to top management that a committee be formed to address the requirements of the technology users. The result was Deposit Guaranty's a Senior Automation Committee, a group made op of such top-level executives as the chairman, the president and the regional executive vice-presidents.

To ensure that the users' voices were heard, each executive vice-president, in addition to his regional division, was awarded sponsorship of a particular user application group, such as Trusts, General Ledger, Payroll and Commercial Loans.

According to DMW Group's Doll, companies should begin network planning by performing a complete opportunity assessment. It amounts to gathering all the pertinent information for economic justification, he explains. He suggests looking for ways to cut costs, establish standards, implement monitoring and diagnostics and enhance connectivity.

"BY PUTTING all customer information into one central database, we effectively brought all the individual banks under one roof."

WAYNE HILLIARD
DEPOSIT GUARANTY

At Deposit Guaranty, studies were done on the effectiveness of the on-line "proof" machines installed at each branch to handle processing of customers' checks and deposits, installment loan transactions and other applications. The study made it clear that the machines became less economical and less efficient as the bank grew.

As a result, the bank decided to convert from analog to digital lines, standardize equipment and consolidate all processing application areas, including check-proofing, general-ledger and accounts-payable. Some applications could be administered locally, including certain initial proofing functions and some administrative functions for localized banking tasks.

"By putting all customer information into one central database, we effectively brought all the individual banks under one roof," Hillard says.

Determined not to get caught lagging behind the bank's expansion opportunities again, IS also ran studies on the number of drops that could go on a circuit without slowing response time. Although a South Central Bell tariff limits the number of drops per circuit to 20, Deposit Guaranty decided to keep it down to 12. "We want to give ourselves some leeway," Hilliard says.

In October 1987, consolidation began. Because of all the work involved in converting each branch, Hilliard says, they took it slowly. "One bank at a time at first, then maybe two," he says. Each conversion required a whole team of programmers, analysts and trainers. The first time, there was no one with experience. The second time, IS enlisted the help of employees from the branch that had already converted, and so on. The process developed a core group of converters who now work on preparing new branches for consolidation into the common network.

Deposit Guaranty plans to keep growing. It also plans to use its network to support its growth. In 1991, NASA is opening a rocket motor plant in northern Mississippi, and Deposit Guaranty intends to be there, network in place, ready to meet the banking needs of every newly arrived worker.

Being able to identify the business-oriented factors that are driving a company's network changes is vital to developing a successful network plan, says Clifford Worth, senior consultant at the information and telecommunications sections of Arthur D. Little, Inc. in Cambridge, Mass.

Frequently, as in the case of Deposit Guaranty, the push factor is growth. In fact, Cargill's Lanttro claims that the No. 1 rule of network planning is to include extra capacity. If a business opportunity presents itself, Lanttro says, it will take three times longer to make the connections if you have to add capacity.

According to Worth, firms should not just wait to discover network opportunities. They should spend time and resources pinpointing the reasons for network expansion. "The idea is to look at all the different activities that occur within the organization and determine what information they require and where that information should come from. Then, you can break them down into a hierarchy, setting priorities and determining where changes could be made to correct inefficiencies or to enhance communications," Worth says.

Once this analysis has been completed, IS will be in a position to look for opportunities to satisfy the company's information flow requirements, such as new services, additional interfaces and network management.

Getting on track

At Union Pacific Railroad in Omaha, the IS department used a systems insurance review to determine the impact a major network overhaul would have on the company.

Basically, according to Guerdon S. Sines, vice-president of information and communications aystems, the railroad was in

If not simple, keep it smooth

The KISS principle seldom works for large-scale networks, which are, almost by their very nature, fated to involve multiple vendors and complex interactions.

Managing a multivendor network project is much like trying to hook together various sizes of garden hose, according to Rich Peterson, project director of information technology at Frost & Sullivan, Inc.: Unless you calibrate carefully, you'll wind up with more water leakage than flow. "Each vendor has its own protocols, sees the world in a particular way and accepts data and voice signals in certain ways. And those relationships must be understood," Peterson says.

Peterson, who authored a recent "Multivendor Implementations and Strategies" report, offers the following tips on how to keep such projects, if not simple, at least controlled:

- **Get an informed buy-in from users.** Review requirements carefully with users, describing planned functionality very carefully so that, instead of a simple verbal OK, you can get a piece of paper saying, "If you build this, this is exactly what it is that I want."
- **Pin down the resource commitment.** Make sure you know what the project is going to require in terms of people and skills. A multivendor installation requires a multidisciplinary team, and you need to know whether you have all the skills in-house and how much of a commitment the job will require.
- **Assign responsibilities clearly.** Every person on the project should know what their responsibilities are. If you are dealing with any outsiders, write a contract with very specific terms for the supply of any services.
- **Impose methodological discipline.** Everyone involved in this kind of project — vendors, system integrators, consultants and staff — must buy into the same approach. If everyone isn't marching to the same drummer, the whole thing will fall apart.
- **Get the jump on problems.** Monitor complex network projects on a weekly or even daily basis. It is also important to prepare some scenarios of problems so you can move quickly into corrective mode if trouble does arise.
- **Investigate the probability that vendors will be able to deliver on promises.** There's always a risk that what is delivered may be different than what was promised, but the results can be particularly devastating when you're dealing with several vendors in a situation in which the performance of one affects the performance of all.

CATHLEEN DUFFY

financial trouble, and top management decided that an enterprise network would help it to achieve optimal organization. But first, the chairman wanted some assurance that the system would work.

According to Sines, IS planned the network as thoroughly as possible and then embarked on the review. It split the department into teams — one retaining responsibility for the system and one abandoning responsibility and taking on the role of the user community. The review attempted to cover all aspects of the network implementation, ranging from programming and continuity of service to training and lines of staff reporting.

"We learned a lot from the review," Sines says. Most important, perhaps, was the fact that implementing the enterprisewide network was as much a social challenge as it was a technical challenge. In the course of the review, the firm came up with a list of risks that included everything from what to do in the case of technical disasters to how much time needed to be allotted for employee relocation.

"WE HAD TO transfer employees and relocate their families. These are very sensitive issues that, if handled incorrectly, could cause the whole system to blow up."

GUERDON S. SINES
UNION PACIFIC RAILROAD

"I can't say we did enough beforehand to address the social implications of the network, but we learned enough to throw more resources into it," Sines says.

The network plan called for drastic consolidation of operations. By centralizing customer service and dispatching operations, Union Pacific realized it could reduce its equipment inventory, improve its train-tracking, crew-calling and customer service operations and increase its profitability. The hardest part of the strategy to oversee, however, was the elimination of five out of nine levels of management.

The radical restructuring was both inevitable and difficult, Sines says. "Our goal was to remove the unnecessary layer between the guys at the top who determine the corporate strategy and the guys at the bottom who effect that strategy," he says. However, making the new organizational structure work was not something technology alone could do.

"We had to address the new lines of staff relationships," Sines says. In many cases, he explains, managers in the field were used to reporting to people they knew on a first-name basis — people they saw around town and maybe socialized with after work. Now they were being asked to report to a faceless voice on a telephone line miles, maybe states, away.

In other cases, employees were asked to move to the central location and assume new responsibilities. "We had to transfer employees and relocate their families," Sines says. "These are very sensitive issues that, if handled incorrectly, could cause the whole system to blow up."

Union Pacific made a concentrated effort to keep the reporting functions in close contact, even if the physical locations were spread far apart. Letting the employees in the field know that there was someone at the centralized location who was dedicated to listening to their problems and working toward a resolution was a top priority.

Going against the grain

The biggest challenge, according to Sines, was working against years and years of a different style of management. "We were faced with a lot of distrust and resentment, and we worked on developing communications skills as a way to overcome that," Sines says. It took time, he adds, but continued integrity and good performance on the part of IS ultimately eroded the suspicion of the new system.

Arthur D. Little's Worth warns that there is almost always going to be fallout as a result of network changes. Minor restructuring is one aspect; resistance and resentment from departmental managers is another; and training employees in the use of new applications is a third.

One of the fallouts of Deposit Guaranty's consolidation effort was the elimination of almost 60 jobs. At Cargill, some employees who did not support the idea of a common network or were not willing to work with the new equipment decided to leave the company.

Lanttro, a 32-year veteran of the telecommunications field, defines network planning as a combination of common sense and risk management. Sometimes, he says, planning the technical connections that make a network function is not enough. ●

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Just no need for a CNO

Most telecom managers say reporting to IS works out fine

BY ALAN RADDING

Is there a CNO in your future? Probably not. Although the idea of a chief network officer elevated out of the communications area and entrusted with responsibility for both data communications and telecommunications makes a great deal of sense to some consultants and researchers, the tide of the times seems to run strongly against the idea.

Until recently, separation of data and voice was the general rule in organizations. Within the past few years only, companies have begun to move in significant numbers toward consolidation of all networks under a single reporting structure. Those who have made the move tend to assign control of all networks to the information systems area, rather than opting to uproot data communications and set up a separate power base in rivalry with IS.

In a study conducted last year, Newton-Evans Research Co. in Ellicott City, Md., found that organizations were generally taking one of three basic approaches to structuring their communications operations. About 40% of the organizations continued to use an older structure in which the manager of data communications reports to the IS director, but the voice communications group remains separate and reports to somebody else — typically, a vice-president of administrative services. In about 30% of the cases, the IS executive was in charge, with a manager of telecommunications services, including voice and data communications, reporting to him, according to Newton-Evans President Charles W. Newton.

GE's Welland *feels perfectly comfortable reporting to IS*

Newton estimates that only a small percent, maybe 5% at the outside, have gone in a different direction and established a chief of communications who oversees voice, data and video communications. This approach, which places the head of communications on a par with the head of IS and transfers data communications into his realm, creates the kind of position that another industry-watcher, Forrester Research, Inc. in Cambridge, Mass., refers to as a CNO.

In a January 1989 report, Forrester made the case for a dual-management structure for IS and communications on the basis that new technologies do not fall neatly within the provinces of either IS or telecommunications.

Among the technologies that Forrester says demand a high-level command of both data communications and telecommunications are comprehensive network management, T3, electronic data interchange, hybrid-switching, local-area network spans and electronic mail.

CNOs, however, are few and far between. For the most part, the closest things to be found are arrangements that put data communications under the wing of a telecommunications-driven group that reports to IS, or ones that set a voice and data communications manager on a par with the IS manager as a direct report of the chief information officer.

Last June, Tenneco Gas in Houston brought its data communications from IS into the telecommunications group to form a combined telecommunications department. "The biggest benefit was the elimination of a lot of duplicated services," says Russell Roy, director of information technology service, to whom the manager of telecommunications services reports. With separate voice and data groups at Tenneco, if somebody moved, two different departments were called to move the phone and the computer, even if they were using common wiring. Under the new system, everything is handled with one call to one department.

Roy says that the arrangement is working out very well. "We do more, and we do it effectively. We present a better picture to the customer now." He says the data communications personnel were skeptical at first, but they've come around after seeing the rewards.

At General Electric Co. in Bridgeport, Conn., Stanley Welland, manager of corporate telecommunications, reports to the corporate vice-president of information technology. Welland is comfortable with this arrangement. One helpful thing, he says, is that the vice-president isn't a dyed-in-the-wool systems type. "He comes from information technology, but he's not a computer center guy. It's important to not just put a jock out of the data center over telecommunications," Welland says. Another plus, he adds, is that his group seems to get more respect now.

The respect might have come without a change in the reporting structure. H. Paris Burstyn, vice-president of telecommunications research at Business Research Group in Newton, Mass., points out that although traditionally "data processing has been more important than telecommunications, [networking has] upset the arrangement, and there is now a tip toward the communications side." Nevertheless, many telecommunications managers seem to feel that a move into IS means coming out of the shadows.

"Telecom used to be a back-office support service, but for the past five years, the majority of telecommunications [departments] have fallen under IS. That gives them a lot more exposure," says Jerold V. Marone, assistant vice-president of telecommunications at Crum & Forster Corp. in Morristown, N.J., and president of the Communications Managers Association.

Other telecommunications managers say the good news is that reporting to IS has made little real difference. At John Hancock Life Insurance Co. in Boston, voice telecommunications was merged into IS two years ago. "We saw the changing technology of the mid-1980s — digital, digital-controlled PBXs. There was a commonality of voice and data. It was all just data bits," says Stephen Kelley, director of telecommunications and network hardware. Previously, telecommunications at Hancock had been a department under the corporate services heading. Kelley now reports to Ron Smith, vice-president of IS.

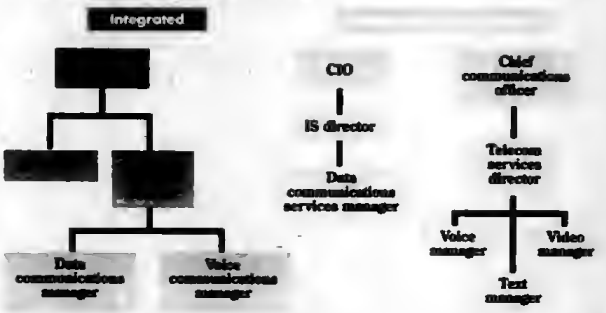
There may be good reasons not to tack telecommunications onto IS. Byron Belitsos, president of Telematics Research in San Francisco, can think of at least one. "We see IS being dismantled, downsized and distributed out to the business units," he says, "but telecommunications is the one thing you want to keep centralized."

Still, the consolidation of voice and data communications is solidly rooted in the IS camp. One reason is the generally greater clout of IS. "If you have a slightly visionary IS director, it's not hard to muster the resources to absorb telecommunications," Belitsos says. "But if a telecommunications manager tried to take over the data side, he'd have a hard time trying to get the support." ●

Radding is a free-lance writer based is Newton, Mass.

Pecking orders

In many firms, the traditional approach to communications management has given way to an integrated structure that ties communications and IS together under the CIO. Some experts also see room for a high-level communications executive



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Choosing a direction at the forks in the network road

BY MARY A. JOHNSTON

There are big decisions ahead for network managers. Over the next few years, fundamental changes in computing and communications will require a reevaluation of many long-standing assumptions about how to design, operate and pay for corporate networks.

Data, image and video are already overpowering voice as strategic network drivers. Desktop and distributed computing environments, which allow users great flexibility and applications diversity, make the job of predicting network bandwidth and peak hours difficult. Furthermore, as more users gain access to networked devices, the variety of individual end-user communications requirements will increase substantially.

For network managers charged with the task of providing 100% applications availability at all times, these changes spell the need for some serious rethinking of network plans. In some instances, this may mean devising new network architectures that downplay integration, allow for multiple networks and rely heavily on outsourced management and operations.

Leaders in the aerospace, high-technology and related manufacturing fields are already beginning to feel these pressures. Other industries will see the same issues emerge during the next several years.

The following are some of the major strategic choices awaiting network managers:

- Use of public vs. private resources.
- Private management vs. outsourcing.
- Local-, metropolitan- and wide-area network (LAN/MAN/WAN) interconnect.
- Broadband vs. narrowband.

In some cases, public carriers may be the best choice, even for applications that were formerly supported by private networks. Advances in public network reliability, resulting from fiber optics coupled with the improved call setup and quality provided by Signaling System No. 7, may make public carrier services viable alternatives to capital- and labor-intensive private T1 networks. Carrier pricing options such as AT&T's Tariff 12 can make public carrier networks highly cost-competitive with an internally operated network.

There is one significant drawback to the use of a public network, however. It will lock the corporation into longer term alliances with a single carrier.

Some firms, such as Eastman Kodak Co., have already rethought the need to own and operate all phases of the network. Outsourcing of network management, whether to carriers or other third parties, is likely to increase as a viable option for companies as network management standards make it easier for a network manager to acquire an integrated picture of how well each network component performs.

FOR NETWORK managers charged with the task of providing 100% applications availability at all times, these changes spell the need for some serious rethinking of network plans.

Network management standards will enable managers to check up on their outsourcing vendors via integrated network management interfaces, such as IBM's Netview or AT&T's Accumaster. Third-party outsourcing may also help some organizations retain a multivendor carrier environment if it is deemed to be important for reliability or security reasons.

That does not mean that a decision to outsource will be right in every situation. For some companies, privately managed, dedicated networks will continue to be the right choice in the 1990s. This is particularly likely when there are very stringent reliability and performance requirements or applications requiring bandwidths of T3 levels or higher.

LAN/MAN/WAN interconnect strategies are also becoming a hot issue. LANs have taken hold as the local data connection of choice. However, new services such as Integrated Services Digital Network (ISDN) and high-speed MANs may provide an alternative for some classes of users. MANs using both the 802.6 and Switched Multimegabit Data Services schemes are about to be tested by local telephone companies.

For example, remote data users that

Johnston is a principal at Northeast Consulting Resources, Inc., a Boston-based consulting collaborative specializing in communications, information systems and strategic planning.

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need to communicate on a casual basis could be adequately linked by 64K bit/sec. ISDN channels if the traffic loads they exchange are not so large as to quickly saturate the slower speed ISDN bandwidth. Users needing to complete wideband data transfers within a major metropolitan area may find MANs to be an effective choice for them.

Network managers may have to adopt several classes of data networking services in order to best match end-user requirements with the cost/performance that is provided by competing technologies.

User diversity is also likely to require more organizations to support two tracks of networks: narrowband and broadband connections.

For example, an insurance organization could provide T3 links for high-speed image transfer between the corporate headquarters and regional offices. However, local agents might be satisfied with 64K bit/sec. or slower dial-up lines. The need to support two different tracks of users — narrowband (under T1) and broadband — simultaneously will represent a major challenge throughout the coming decade.

Taking compass readings

Given the changes taking place in network utilization and technologies, it is no longer possible to use existing rules of thumb for network planning. Instead, network managers must construct new rules on the basis of fresh assessments. Specifically, it is time to reevaluate end-user activity, applications diversity and the voice/data mix.

In some companies, centralized host-based processing now represents less than 50% of all end-user computing, down from over 90% just a few years ago. As end-user computing has exploded, LANs, bridges and routers have proliferated — but not always under the supervision of the central network manager.

The true range of computing applications and network requirements may be masked from the central planners because of the speed of the decentralized implementation that has characterized the rise of end-user computing.

In addition, any single company currently may support a range of applications with very different performance and throughput requirements. A single oil company could operate a high-speed Transmission Control Protocol/Internet Protocol internet for its engineers, a lower speed monitoring network for its pipelines and refineries and a transaction-oriented point-of-sale network for its gas stations. Data, voice, image and video all need support but exhibit radically different network requirement profiles.

Some industries are finding

NETWORK MANAGERS must construct new rules on the basis of fresh assessments. Specifically, it is time to reevaluate end-user activity, applications diversity and the voice/data mix.

that voice is no longer the strategic network driver. The combined network volume of data and image is greater than that of voice and requires different network engineering metrics than does an integrated utility dominated by voice. New frame relay multiplexers handle voice in the same way as data, allowing for more economic use of high-capacity backbone links. Continued growth in data, image and video will make many voice-oriented planning metrics obsolete.

If major changes have occurred in network requirements, they may be a signal that the company's network architecture should be adapted as well.

Just as applications vary, so will network architectural choices. The key to making the right decision for your company is to know what your diverse end users are doing today and plan for tomorrow accordingly. •

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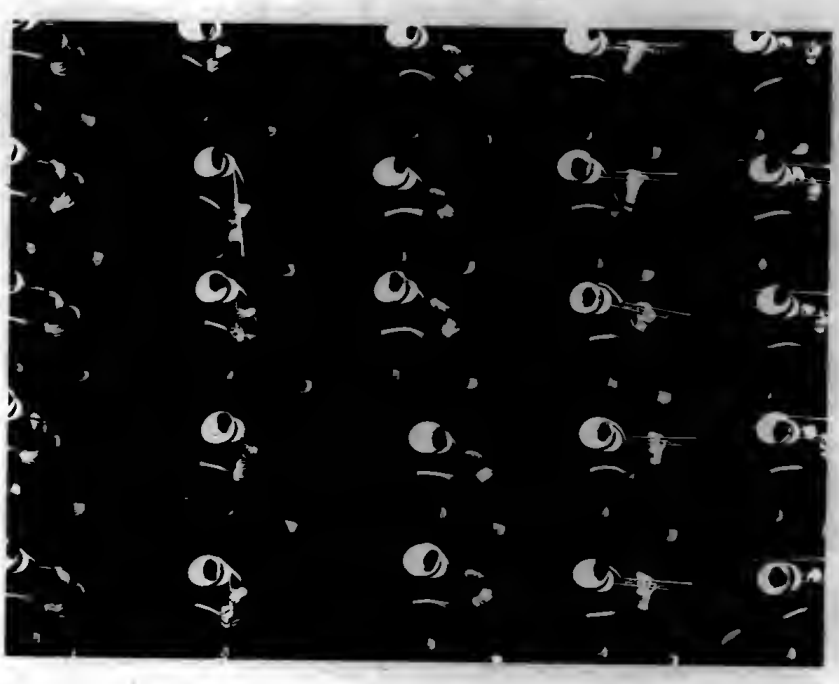

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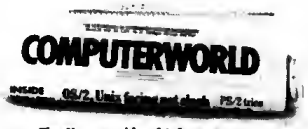

The Newsweekly of Information Systems Management

Information services update

These days, IS also means 'information services.' Here's a quick briefing on recent important news

BY JOSEPH MAGLITTA

"*I just can't get enough/I just can't get enough/I just can't get enough/I just can't get enough ...*" The words are from a song by post-punk rock group Depeche Mode, but they could just as easily be spoken by users about information.

Like it or not, IS is in the information business these days. More users want to know more about more things. Markets. Financial information. Business and company news. Social and political trends. Global news. Scientific and research advances. And they want it in easy-to-access and full-text formats.

While nobody expects information systems people to become librarians, it is clear that keeping end users well fed with *all* types of information is now part of the job.

In fact, it's not hard to imagine a day in the near future when "IS" will stand less for information *systems* than for information *services*. Thus, it makes sense that to be effective, IS professionals in organizations of all sizes need to have at least a familiarity with what's going on in the world of information services.

Why the big demand? What happened to the days when users were happy with a few internally generated sales reports or financial statements? Users' hunger for information has sharpened for several reasons. First is the booming popularity of personal computers, modems and improvements in networking technology. Desktop devices provide easy windows into countless new worlds of information.

The second reason is that the "information-based corporation" is becoming a reality. For years, futurists and management messiahs such as Peter Drucker have prophesied its coming. Now that the information age is unmistakably here, IS gets the nuts-and-bolts job of turning the idea into reality.

The third reason is the phenomenal growth of the commercial information industry. Some 800 companies are now battling it out in the electronic services arena, up from around 300 just five years ago. Selling online information is now an $8 billion industry, growing at an average rate of 20% annually. The leading organization, Dayton, Ohio-based Mead Data Central, earlier this month reported a 30% increase in revenue in 1989, to $401 million.

Russell Jones

Smelling big profits, heavyweight challengers such as Knight-Ridder, Inc., Reuters Holdings PLC and Dow Jones & Co. have quickened their efforts. Many smaller, specialized services have also leaped in.

To entice new subscribers, companies are sprinting to offer new services and put a new shine on old ones.

Mead, for example, recently began a new service on Nexis that gives subscribers access to the texts or abstracts of nearly four dozen English publications, including the *Financial Times* of London and the *Economist*, a weekly news magazine.

Things have grown so fast that many large organizations today are experiencing information overload. It's no surprise that the hottest new products are tools that help users pick through information.

Individual, Inc. in Cambridge, Mass., for example, sells First. This $1,995-per-year service scans major newswires and the next day sends subscribers a customized newsletter containing only information that interests them. Similar products are offered by Desktop Data, Inc. in Waltham, Mass., Gescan International in Research Triangle Park, N.C., and American Real Time Service in New York.

Information is hot. To help you keep up with this fast-paced industry, what follows is a selective overview of some important recent developments:

■

U.S. Supreme Court going on-line. The nation's highest court will begin to electronically transmit court opinions to a dozen public and private organizations beginning June 1.

Thanks to a decision made two weeks ago, selected publishing, government and nonprofit organizations will connect their computers directly to the Supreme Court's computer as part of a two-year pilot project.

Agencies chosen to participate, for a $500 annual connect fee, are the following: The Associated Press; The Bureau of National Affairs, Inc.; Case Western Reserve University; Commerce Clearinghouse; The U.S. Department of Justice; Mead Data Central; the National Clearinghouse for Legal Services; the Supreme Court Opinion Network; the Thomson Group; United Press International; UUNET Communications Services, Inc.; and West Publishing Co.

To ensure security, no direct computer-to-computer communications will be allowed, the court said. A court clerk will

Maglitta is a *Computerworld* senior editor, in depth/integration strategies.

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take an approved computer disk containing the opinions and place it in a computer for transmission to subscribers.

■

New offerings from Dow Jones. The Princeton, N.J., publishing giant has announced Dowvision, a real-time information service designed to deliver business news and information through corporate computer systems to desktops.

Organizations paying a flat fee can get selective live feeds of Dow Jones news service, PR Newswire, The Business Wire and other services. Delivery is via an X.25 national network that uses a 56K-byte backbone and 9.6K-byte local loops to reach subscribers. The company says future offerings will include access to other business and financial databases.

Separately, Dow Jones Information Services announced that its News/Retrieval service would be offered through Bellsouth Corp.'s Transtext Universal Gateway. Subscribers will be able to access live business news and historical information on a pay-per-minute basis. For more information, contact Dow Jones at 609-520-4000.

■

Transatlantic link opened. For the first time, researchers on both sides of the Atlantic Ocean will have high-speed access to high-tech information resources and distant supercomputers.

IBM and MCI Communications Corp. are sponsoring the new high-speed T1 transatlantic link as part of their partnership in the National Science Foundation Network. Other members include the National Science Foundation, the Merit Computer Network and the State of Michigan.

Sponsors say the project opens up new possibilities for scientific collaboration between the two continents. The U.S. gateway is at the Cornell National Supercomputer Facility in Ithaca, N.Y. For more information, contact IBM at 914-945-1263.

■

Text understanding software from Verity, Inc. A "text understanding" software package was announced by the Mountain View, Calif., company. It also announced a joint marketing and sales agreement with Dow Jones.

Topic Real-Time analyzes and selectively routes on-line, real-time information to users based on specific profiles, the firm said.

Described as a "knowledge agent," Topic is a client/server software package that runs on DOS, OS/2, Unix and Digital Equipment Corp.'s VMS. Prices for client software range from $695 to $1,000, depending on the platform. Servers start at $15,600 and go up to $150,000, depending on the platform and number of users.

Under the joint agreement, Verity becomes an authorized reseller of Dowvision and will share Topic technology.

For more information, contact Verity at 415-960-7600.

■

Boost for European database industry. Leaders of the U.S. information industry voiced optimism about the future of database publishing in a unified Europe.

The optimism came after testimony by members of the Information Industry Association in Washington, D.C. Representatives presented views on database copyrights to a panel of officials from the European Economic Community's Directorate General III meeting in Brussels late last month.

The U.S delegation argued that "clear, certain, consistent" copyright protection would encourage investment in new products and services by U.S. and European firms. The favorable reaction was hailed as "great news for the growth of the database industry." For further information, contact the Information Industry Association at 202-639-8262.

■

Real-time stock quotes. Knight-Ridder's Dialog service now offers continuously updated market quotes. Real-time access to Money Center, a PC-based service, is also planned.

Money Center, now offered to dedicated PCs via broadcast technology, provides real-time coverage of treasury and mortgage-backed securities, futures, money-market instruments and foreign-exchange data. For more information, contact Dialog Information Services, Inc. at 415-858-3847.

Mead Data Central also announced availability of real-time market quotes to Lexis/Nexis subscribers via its Dataline, Inc. subsidiary. Quotes are available for equities, bonds, mutual funds and money-market funds from New York and other U.S. stock exchanges, all Canadian stock exchanges, NASDAQ and NASDAQ/National Market System. Each quote requested through Quote Finder or Quote Saver files costs $1 plus connect charges. For more information, contact Mead Data Central at 513-865-6800.

■

New Compaq disc support library. Compaq Computer Corp. introduced the Quickfind Support Reference Library, a compact disc/read-only memory (CD-ROM) that contains 15,000 pages of documentation on all Compaq products. Included in the illustrated disc are maintenance and service guides, technical references, product bulletins, application notes, technical updates and quick-reference charts. Available immediately through authorized dealers, the library lists for $795 per year and $1,795 for a networked version. For more information, contact Compaq at 713-370-0670.

■

Arthur Andersen gets into CD-ROM business. The Chicago-based consulting and accounting firm announced it will offer CD-ROM development and support

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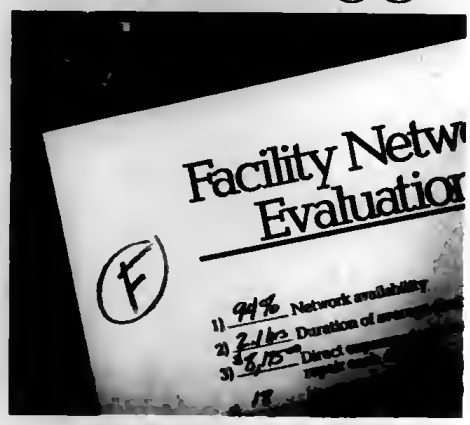

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services. The briefcase-size system includes a CD reader and contains volumes of procedures and guidelines used by accountants. The services organization will evaluate user information needs and offer systems and support. For more information, contact Andersen at 312-507-2866.

■

Phone companies eye information services business. A U.S. Court of Appeals ruling nudged open a legal door that would let regional Bell operating companies get into the information services business. RBOCs are currently prohibited from entering the market. The recent court action brings the RBOCs closer than ever, though a final ruling is at least six months away. Newspaper publishers, consumer groups, cable television operators and independent electronic publishers have opposed the measure. Reasons: fear of lost revenues, unfair competition and the potential for fare increases to offset development costs.

■

Feds frosty on plan to privatize government data. Would on-line federal records be easier to access if handled by private firms? Legislation to encourage privatization of federal on-line services got a chilly hearing from a Senate committee recently. The bill, S-1742, is supposed to improve public access to government records. Fears focused on possible damage to the Federal Depository Library Program and the inability of students and libraries to pay fees. A related bill proposes user fees to access on-line, CD-ROM and other government electronic information services. Debate continues.

■

Free Genie software for IBM Personal Computers. The Genie on-line information service from GE Information Services (GEIS) in Rockville, Md., now offers a free front-end applications software package for use on IBM PCs and compatibles.

The Aladdin software lets PCs automatically log on to selected voice on-line offerings, such as GE Mail, Roundtable Bulletin Boards and software libraries. The company says speeding up operations will save subscribers money by reducing on-line access charges. Software can be downloaded free of charge by Genie service subscribers (except for connect time) from the IBM PC Roundtable or the Aladdin Roundtable on the Genie service. For more information, contact Genie at 301-340-4000.

■

Major Japanese information firm expands U.S. ties. ASCII Corp. signed an agreement with General Videotex Corp. in Cambridge, Mass., that allows the company to greatly upgrade its communications network and data services. The arrangement lets ASCII link its ASCII Net on-line information services network, the third-largest in Japan, to General Videotex's Delphi network, the third-largest in the U.S.

Japan's two largest information service providers, NEC and Fujitsu Ltd., already have ties with U.S. on-line firms. For more information, contact General Videotex at 617-491-3393.

■

Minitel grows globally. The French information service network — the world's largest and best known — continues to expand. Italy just hooked up, joining the UK, Japan, West Germany, Belgium and Hungary. Many U.S. firms in Europe, including 3M Co., The Coca-Cola Co., General Foods Corp. and IBM, now use the Minitel service for sales, marketing and recruiting.

U.S. users can already access Minitel's international network. Last November, US West developed a pilot that lets users in Omaha connect to its "Community Link" system, developed with Minitel USA. Southwestern Bell, U.S. Videotel and Infonet are also reportedly working with Minitel.

For more information on France Telecom, contact Barry Rothschild at 212-889-1200.

■

Genie expands to Europe. Access is available in West Germany, Austria and Switzerland via GEIS network services distributors. Cost is $18 per hour in U.S. dollars for nonprime-time access and $27 per hour in U.S. dollars for prime-time access. Nonprime-time rate is Monday through Friday from 6 p.m. to 8 a.m. local European time at the user's location and all day on weekends and designated holidays. For more information, contact Genie in Cologne, West Germany at 02233-6091.

■

On-line access to public documents. Libraries can access the Information On Demand (IOD) document delivery service after June 1. IOD is a full-text document delivery service that locates and retrieves copies of any publicly available document, regardless of subject, date or publication type. Delivery is through the the Online Computer Library Center, a nonprofit computer library service and research organization based in Dublin, Ohio. For more information, contact OCLC at 614-764-6000.

■

New Compuserve/Banyan service. Local-area network maker Banyan Systems, Inc. in Westboro, Mass., will offer its new Bannet on-line service over the industry leading Compuserve network. The round-the-clock service gives subscribers access to Banyan information and creates a public forum dedicated to Banyan. To promote use, Banyan is offering customers a free Compuserve introductory membership. For more information, contact Banyan, representative 175, at 800-848-9199. •

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NATIONAL
BRIEFS

Happy together

According to figures compiled by Needham, Mass.-based **Venture Economics, Inc.**, Japanese equity investors and co-venturers have been more active in the U.S. during the past five months than have their counterparts from all the European countries put together. A study of 426 alliances formed since January, largely in the electronics/computer hardware/industrial automation area, showed Japanese allies accounting for 23% of equity deals and 24% of joint ventures; European countries accounted for 7% and 11%, respectively.

Two out of three ain't bad

Database machine vendor **Teradata Corp.** can't yet claim to have acquired former competitor **Sharebase Corp.** — the deal is still pending approval from the Sharebase shareholders — but as of last week, it is an official owner of an 11% stake in its target. In addition to the stock purchase, which was one of the conditions prior to closing the deal, Teradata's board of directors satisfied a second condition and voted its approval.

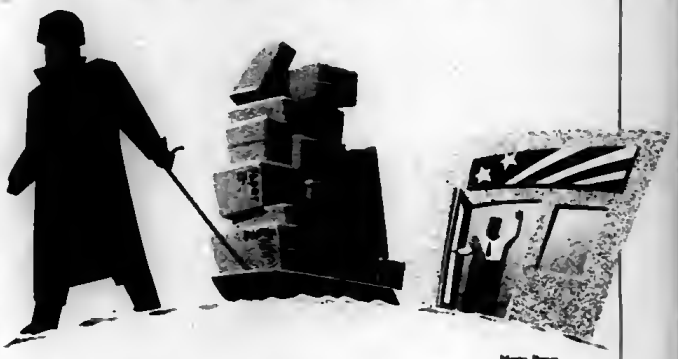
More briefs on page 96

Helping the Soviets help themselves

If the U.S. says 'nyet' to Soviet technology needs, the Soviets will look elsewhere

First in a two-part series

BY PATRICIA KEEFE
CW STAFF



There'a no time like the present, especially if you are already two years behind the market. That, and the reliable premise that you've got to spend money to make money, even if it'a dollars for rubles — are the messages Soviet business and legal experts say U.S. computer companies should take to heart when eyeing the awakening "bear market" in the Soviet Union.

Vendors who are unwilling to take what could be a bracingly cold bath in the short term may lose their shot at one of world'a largest untapped markets for computer goods. Western suppliers should expect to spend a minimum of two years and as much as $1 million before turning a dime of profit, cautioned London-based Bruce Marquart, general manager of Eastern Europe operations at Ashton-Tate Corp.

However, the potential for reaping impressive capitalistic rewards by exploiting the rapidly thawing Soviet market is enormous. The populace of just under 300 million shares but 200,000 to 300,000 personal computers, as well as an appreciation of mostly "black" or pirated Western software. They also face extreme shortages of the most basic computer supplies, including floppy disks and computer paper, according to Frank Cuttita, international marketing director at Framingham, Mass.-based IDG Communications.

Despite a 20th century version of Russia'a "Time of Troubles," which has manifested itself in the fragile nature of both *perestroika* and many proposed business reforms and is exacerbated by a battered economy, now is the time to embrace *glasnost* on a business level, said Peter Alexander, an executive vice-president at Glav-PC, Inc., a Berkeley, Calif.-based concern specializing in joint ventures.

It will not be a cakewalk. Despite possessing a well-educated work force, business dealings in the USSR are hampered by Third World-like conditions and nonconvertible currency, Alexander acknowledged.

Even so, it would be a mistake to dismiss the Soviet market as just a modern-day "Potemkin Village," offering little of substance beyond an attractive shell. "They are very desperate to have computer technology, and once the door is open and [a firm] is established, there will be plenty of opportunity," he said.

That is why some developers, alerted to widespread use of unauthorized copies of their applications, are moving to capitalize on a growing, albeit, unofficial user base. Ashton-Tate and Belmont, Calif.-based Oracle Systems Corp., for instance, have struck deals with Soviet programmers to license their add-in tools and unauthorised Cyrillic ports.

Because the Soviets have proved adept at pirating and reverse-engineering popular Western software, it turns out that their most pressing impediment is a crippling lack of hardware.

The government has made clear its determination to acquire badly needed hardware — one way or another. In an interview with *Computerworld* last year, a visiting Soviet official bluntly stated that his country would continue to steal technology for as long as the West refused to sell it. This issue may soon become moot, as the June meeting of Cocom, or the Coordinating Committee for Multilateral Export Controls, is expected to loosen export controls (see story page 97).

Continued on page 97

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Symantec acquires Norton Computing

BY CHARLES VON SIMSON
CW STAFF

CUPERTINO, Calif. — Symantec Corp. has announced the $70 million acquisition of Peter Norton Computing, Inc., a purchase that broadens Symantec's utility business and gives it access to the strong Norton Computing brand name.

"We have followed a strategy of acquiring strong brands in certain product segments," said Gordon Eubanks, president and chief executive officer of Symantec. "The added Norton products will leverage our recently expanded sales force," he added.

Analysts were largely positive about the announcement, citing strong synergies between the two companies' product lines.

Symantec develops a broad line of personal computer software for IBM-compatible desktop systems and Apple Computer, Inc. Macintosh platforms. Norton Computing develops software utilities for Unix, DOS and Macintosh systems.

The two lines are largely complementary, with the exception of one area — a Macintosh utility — in which the companies have competing offerings. Corporate officers said that the two products would be merged over time into a single offering.

Symantec went public in July 1989 — a primary reason cited by executives of Norton Computing, a private company, for accepting the offer. "This gave us quicker access to public capital markets, a process we had been planning for some time," said company founder Peter Norton. Privately, analysts speculated that Norton, who works part-time, was anxious for the opportunity to cash in some portion of his shares without selling the company outright.

Shareholders of Norton Computing, largely executives and employees, will receive approximately 2.9 million shares of Symantec common stock, valued at about $70 million. Norton himself will become a director of Symantec and the company's largest shareholder, with about 30% of its stock.

While Norton denied that he had any plans to leave the merged company completely, both sides acknowledged that at least one senior executive will resign after a transition period. Ron Posner, a former senior Ashton-Tate Corp. executive and Norton Computing's president and CEO, is likely to leave after the merger is finalized and operations are running smoothly, according to Eubanks.

However, he added, "Today and tomorrow, his job has not changed." Posner will also be named to the board of Symantec.

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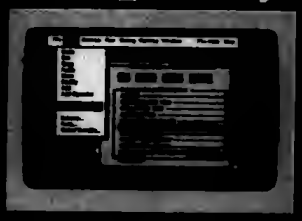

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INTERNATIONAL BRIEFS

At the Finnish line

This month's opening of **Compaq Computer Corp. OY** in Helsinki, Finland, brings the personal computer player's foreign subsidiary count to 16 — and brings Compaq one step closer to its goal of total European market coverage, according to a company executive. The new subsidiary will reportedly support the entire Compaq product line, which will be marketed through a Finnish authorized Compaq dealer network.

Public and partnering

Santa Clara, Calif.-based **Integrated Systems, Inc.** has followed up its early spring initial public offering with a technology development partnership with Tokyo-based **Nissan Motor Co. Ltd.**, the software developer announced last week. Under the newly inked agreement, Integrated will tailor its computer-aided engineering and computer-aided software engineering offerings to automotive applications.

Nice and Easy

Norcross, Ga.-based software development company **Easy Automation Systems, Inc.** signed on last week for the last lap of application development work on the reservation and travel agency management system it has spent the past two years creating for Nice, France-based **Amadeus Development Co. S.A.** A four-airline venture co-owned by Lufthansa German Airlines, Air France, Iberia Air Lines of Spain and Scandinavian Airlines System, Amadeus currently has its reservation system running on some 21,000 terminals — accounting for approximately 65% of Europe's automated travel agencies, according to Easy. When complete, the Easy-built system will reportedly allow travel agencies throughout Europe to tap in.

Due to a software error at the credit card company, the power lunch is now in hot water

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INDUSTRY INSIGHT

J. A. Savage

A lesson in humility

About this time last year, IBM plug-compatible mainframe maker Amdahl Corp. was acting cocky. President Joe Zemke crowed like a rooster, "Revenues are up! Margins are up! Our non-IBM competition has dropped lower than the sun on a Kansas wheat field in August!"

Earlier this month, a less-cocksure Zemke weakly scratched the ground, summoned up his energy and peeped "Revenues are up." Somewhere along the way to the close of its fiscal year 1990, it appears, Amdahl lost some of its arrogance.

The last 16 months' worth of slaughterhouse tactics in price competition between Amdahl and IBM has left Amdahl reeling from lack of profits on its biggest and most popular machines. The last year also found Amdahl in the position of laying off 300 of its employees.

During that time, Amdahl's other rival — the former National Advanced Systems, now Hitachi Data Systems Corp. — began to feel the strength of its new owners, Hitachi Ltd. and General Motors Corp.'s Electronic Data Systems division.

Last year, Zemke claimed that Amdahl's strategy "probably resulted in National Advanced Systems being on the block." However, with the likelihood that the new Hitachi Data Systems will get its next-generation mainframe to market before either Amdahl or IBM ship theirs, the sale of National Advanced Systems may come back to haunt him.

Zemke, who had formerly discounted Hitachi Data Systems' presence as "not very strong," actually used the plural "competitors" last week when describing the market. In a similar context only a year ago, he insisted on using the singular "competitor" — meaning IBM only.

"With Hitachi, the uncertainty is removed," Zemke said, referring to the on-again, off-again buyout negotiations over a year ago between National Advanced Systems and other suitors. Still, Zemke mustered the old haughtiness and added, "We're going to have to see a consistent track record."

The fact that three companies expect to come out with a next-generation mainframe, or at least specifics, by the end of the year puts additional pressure on Amdahl, particularly as potential customers consider short-term leasing instead of buying its machines. "Leasing is not a significant issue to date," Zemke said.

Zemke isn't saying the sky is falling — only that he can't say what will happen in the long term. He maintained that the cost of producing the company's largest mainframe, the 5990, has gone down, allowing for more profit on each machine. But the price competition remains.

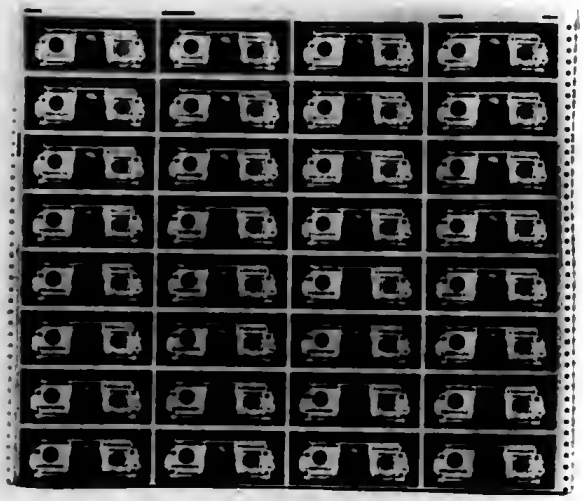
Zemke said that at least his sales force has learned the necessary tactics, which one analyst said went as far as IBM's — dropping a mainframe price $1 million over a weekend.

Analysts and users agreed that Amdahl's machines have solid technology, although Zemke insisted their reliability is 20% higher than the competition.

He just couldn't help but crow about something.

Savage is a *Computerworld* West Coast senior correspondent.

Buying a mainframe printer wouldn't be so costly if you could print this with it.



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NATIONAL

BRIEFS

Did you ever have to make up your mind

Stardent Computer, Inc. has resolved its bicoastal joint headquarters situation, and the home base will be Newton, Mass., operations central for President and Chief Executive Officer John William Poduska. Stardent said the relocation of its Sunnyvale, Calif., offices will be a done deal by the end of November. Those of the 115 Stardenters now in Sunnyvale who don't like what *The Old Farmer's Almanac* says about Massachusetts winters need not despair, however: The firm is offering some 75% of them the option of staying in Silicon Valley to work either at its Milpitas, Calif., sales office or at a new subsidiary to be opened by investor **Kubota Computer, Inc.** of Japan.

Money

Venture capitalists have continued to tout fiber-optic telecommunications as one of the computer industry's hot investment areas, and last week, several put their money where their mouths are. Five new investors and three first-rounders teamed up to give Research Triangle Park, N.C.-based **Broadband Technologies, Inc.** a $10 million second round of financing. The fund is aimed at speeding Broadband's commercialization of a fiber-optic subscriber loop transport system.

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23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Mgrs. Supry. of Programming, Software Dev.
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Types of equipment with which you are personally involved either as a user, vendor or consultant
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Keep those papers in order

BY PATRICIA KEEFE
CW STAFF

As it is when you mess up on your taxes, ignorance is no excuse when it comes to Eastern Bloc export do's and don'ts.

Merely discussing technology located on the wrong side of the licensable list of exports with potential Soviet partners is illegal. The penalties for screwing up — never mind the public humiliation — are stingingly stiff. Just ask Toshiba Corp., which incurred the wrath of Congress last year after it was found to have sold advanced technology to the Soviets.

Part of the difficulty in selling technology to Iron Curtain countries is that once you move beyond IBM Personal Computer AT-class machines, regulations of the Coordinating Committee for Multilateral Export Controls (Cocom) are more oriented toward specific performance characteristics, than blanket statements on what can and cannot be sold.

Established in 1949, Cocom is a federation of 17 countries, including the major Western powers, that has attempted to restrict the flow of strategic technology to the USSR and its Warsaw Pact allies. Its rules can be confusing. For example, IBM cannot sell Personal System/2 Model 70s or 80s to the Soviets without a special license, but it can sell an Application System/400 or a 9370, albeit with a maximum of only 8M bytes, a spokesman said.

"The operative rule of thumb is, 8M bits is okay, 16M bits is questionable, and as for 32M bits — no way!" said Edward Lieberman, a tax attorney at Cole, Correte & Abrutyn, based in Washington, D.C. "You'd better do your homework. You fail to get these licenses at your peril."

Closed to the Soviet market without a special license are Intel Corp. 80386 and 1486 computers, multiuser software, networking equipment and some manufacturing technology. The latter has created a problem for companies such as Boston-based Innovation International, Inc., which would like to manufacture computers in the Soviet Union but does not want to rely upon "screwdriver assembly."

Handcuffed by export restrictions, frustrated Western vendors are forced to step aside while competitors from non-Cocom countries such as Singapore, India and Taiwan reap financial rewards through sales of 386 and 1486 clones and other equipment.

"There probably isn't anyone in the Soviet government who needs a 386 who doesn't have one," said Peter Alexander, a Russian emigre and executive vice-president at Glav-PC, a Berkeley, Calif.-based consulting firm specializing in the Soviet market.

His point is sinking in. The rules of the export game are changing almost daily, and much like the intimidating army of irregular Russian verbs, exceptions can be found to virtually every rule.

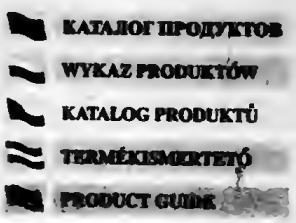
The big news is the likelihood that the U.S will capitulate to the impatience of fellow Cocom members at next month's meeting in Paris. The U.S. has tended to be the lone dissenter in attempts to loosen export controls on technology sales to the Eastern Bloc.

Bill Chastka, vice-president of Washington, D.C.-based Resources International, Inc., said Cocom may dissolve if the U.S. does not fall in with the pack.

Apparently, the Bush administration agrees. In a recent press statement, it admitted not only that "most of the goods and technologies" currently controlled are of low strategic value but also that many of these items, such as high-end PCs, are readily available elsewhere.

President Bush said earlier this month that he will recommend that Cocom develop "a new core list of goods and technologies that is far shorter and less restrictive than the present list" by the end of the year. For example, barriers to sales of off-the-shelf PCs, machine tools, some mainframe computers, fiber-optic technology and microwave equipment could be lifted.

But at a Washington seminar two weeks ago on export controls, computer industry executives suggested that Bush's proposals neither go far enough nor are likely to move fast enough.



Ashton-Tate Corp.

Soviets

FROM PAGE 93

The timing could not be more opportune. Internal demand for PCs is expected to reach 17 million to 30 million units by the year 2000, according to Alexander Vasenkov, who heads up the USSR's Computer Technology Department. One Soviet proposal reportedly seeks to import $1 billion worth of PCs for educational use alone.

Because Soviet manfacturers cannot possibly meet this demand, the government is forced to look West — or East, if need be — to quench this technological thirst.

Beyond sheer numbers, the Soviet consumer is in many ways a dream customer. He not only *wants* to buy bundled systems, but he will take every add-in and peripheral he can get whether he needs it or not, according to Oleg Smirnov, director of the Institute of Automated Systems (ISA).

The motivation behind such enthusiasm is readily apparent. The Soviet enterprises that already do business with the West typically sell raw materials for hard currency; otherwise, hard currency is a scarce and closely monitored commodity for most would-be purchasers (see story at right).

Needless to say, computer vendors out to make a quick killing with overpriced or mediocre products will be shown the door fast, predicted Frank Wright, president of Innovation International, Inc., which is involved in a joint venture with the ISA.

Despite widespread ignorance of capitalist business practices, hit-and-run tactics are discouraged. The Soviets are neither rubes nor pushovers, their Western business partners say. They have have been bartering with the West for decades, after all.

However, they are eager to execute joint ventures and explore technologies ranging from networks to desktop publishing. In return, the Soviets reputedly offer some of the world's most skilled programmers, particularly in artificial intelligence, and a shot at the ground floor of an emerging software industry.

It will take cautious, careful planning, endless patience and a well-lubed checkbook to step up to the bargaining table. "The Soviets are fascinated with our leadership in hardware and software," Alexander said. "But if we just sit around and wait and see, they'll throw their hand in with Japan and Europe. And they're already two years ahead of us."

Marketing in Moscow: Jump the Iron Hurdle

BY PATRICIA KEEFE
CW STAFF

Two Soviet women stop outside an Estee Lauder store window filled with an array of small perfume vials surrounding one gigantic bottle. A succinct sign in the window reads "120 rubles." The older woman turns to the younger one and asks, "Is that the price for the big one or the little one?" . . . Recently overheard in Moscow.

"No concept."

That phrase is used again and again to sum up the yawning gulf of understanding between the emerging class of Soviet businessmen and Western marketeers eager to exploit a largely untapped market.

It is not just a matter of simple cultural differences. The crux of the crater-sized gap lies in what Washington, D.C.-based attorney and Soviet specialist Edward Lieberman likes to call "a problem of unworldly economics."

Seventy-odd years of Communist policy — most notably the concept of central planning — has left a shattered economy choked by stifling bureaucracy and stalled by cynical workers who are said to "pretend to work as long as they pretend to pay us."

Unused to the whole idea

There is little concept of commercial enterprise beyond an underground economy, a few collectives and a slowly emerging class of tiny, private businesses. The result is two or three "mountainous" problems, according to both Lieberman and Larry Heimendinger, president and chief executive officer at Nantucket Software Corp., which has launched a Moscow-based office staffed with Soviet workers. Any attempt to conduct business within the Soviet Union will quickly run smack into the following obstructions:

- The Soviet ruble is not convertible, except via a few specially approved consortiums of Western vendors that swap rubles for dollars. Nor can rubles be taken out the country.
- There is on cost accounting in the USSR. In a subsidized economy, production costs are of little concern.
- It is difficult to determine what anything is worth, because prices are arbitrarily and artificially set. "If you see something priced at three rubles, it may not bear any relationship to what it cost to make the product," Lieberman explained.
- Soviet manufacturers and suppliers are tied to centrally planned goals; they can only accommodate Western clients after meeting their quotas.
- Soviet managers are not used to making decisions.

These conditions, combined with an oppressively slow bureaucracy, can leave the already complex art of the business deal fraught with added peril, according to U.S.-based computer firms that have already dived into the murky Soviet market.

For example, in the early stages of any joint venture, many Soviets are likely to look to their Western partners to come up with policy as well as decisions on trivial matters, said Helen Charov, president of Charov Associates, a Moodus, Conn.-based international consulting firm.

In short, U.S. business executives eying the Soviet market may do well to adopt as their mantra the astute observation of Dorothy in *The Wizard of Oz*: "Toto, I've a feeling we're not in Kansas anymore."

The curtain rises

Among the U.S.-based computer and software vendors that have executed joint ventures or established sales initiatives in the Soviet Union are the following:

Innovative International, Inc.
JV Dialog
Paragraph
Nantucket Corp.
Software Products, Inc.
Oracle Corp.
IBM
Ashton-Tate Corp.
Microsoft Corp.
Datamax International, Inc.
Autodesk, Inc.
AST Research, Inc.
Data General Corp.
Hewlett-Packard Co.

Resellers include:
Computerland Corp.
Micropage
Micro America/Softsel

Other vendors, such as Compaq Computer Corp. and Lotus Development Corp., have said they will wait to see how the Soviet market and its various economic problems shake out before deciding whether to enter the market.

COMPUTER CAREERS

Uniting nations — on networks

Global network managers integrate eclectic parts for common goals

BY TAMMI HARBERT
SPECIAL TO CW

The great distances between locations are quickly disappearing as corporations use global data and voice networks to take advantage of the growing business opportunities in Europe and the Pacific Rim.

As more companies exploit advances in networking technology and become global, there is a greater need for managers capable of running worldwide networks.

The senior network executive has a major role to play in driving a company's growth and helping to use technology as a strategic resource. He therefore needs good business intuition and strong leadership skills.

A global network manager must also have the ability to deal with a kaleidoscope of national diversity, particularly the variety of national tariffs and regulations.

A network manager must survive in a political environment, balancing the needs of divisions in a corporation with the company's broader strategic goals, says Howard Frank, chairman of Network Management, Inc., a systems integrator located in Fairfax, Va.

Frank's company, for example, plans to install an imaging system on its network and has assigned the network manager to chair a committee of users to determine what they will need from the system.

In such cases, the manager must weigh the users' demands in light of their costs and technical feasibility and the company's strategic direction.

Network managers also help orchestrate how people in various parts of an enterprise work together. They control what information is sent where and must ensure that time-sensitive data gets delivered to its destination quickly.

Managers of global networks also need to anticipate and work around various hazards and security risks, notes William E. Darden, a consultant and former network manager at Storage Technology Corp. in Louisville, Colo.

The lesson was driven home to him when, after his company built a plant in Puerto Rico, hurricanes kept blowing down communications lines.

Another challenge is handling diverse communications infrastructures, which vary widely in terms of speed, available capacity, quality of transmissions and other technical capabilities.

Services are quite modern in Europe and Japan but are antiquated in many other parts of the world, says Alex Hills, director of the Information Networking Institute at Carnegie Mellon University.

The issue is complicated by constant changes in the structures of national telecommunications industries. Some are run as government monopolies, while others are in various stages of deregulation. The situation will define options, such as the possibility of setting up a cross-town microwave link, Hills says.

Understanding and dealing with the world's patchwork of national telecommunications regulations is another big challenge. Many codes carefully list restrictions but provide little in the way of helpful, positive guidance, Hills says.

Each country in Europe, for example, regulates the devices that can be attached to data and voice networks, so a company cannot assume it can use one vendor's modem in neighboring countries. "There is no substitute whatsoever for knowing the specifics," Darden says.

Some governments also restrict the information that companies can transmit past their borders. They often do so because of concern that exported data may take jobs or business opportunities with it, says Dan Lynch, president of Interop, Inc., a computer systems training company.

Regions with many small countries complicate these issues, Hills says. Some of them, led by Europe, are trying to establish uniform regulations. Managers also need to keep up with efforts to establish international technical standards.

Most managers learn about these regulatory matters while they are on the job. Formal education programs are rare, though some do exist.

Carnegie Mellon offers a master's degree in information networking that combines business, electrical engineering and computer science. The program taps expertise in telecommunications regulation through the school's Department of Engineering and Public Policy, Hills says.

Consultants cite several other programs. The University of Wisconsin offers degrees in telecommunications policy. The University of Colorado at Boulder and George Washington University in Washington, D.C., offer programs in telecommunications — George Washington with an international slant.

> A NETWORK MANAGER must survive in a political environment, balancing the needs of divisions in a corporation against the company's broader strategic goals.
>
> HOWARD FRANK
> NETWORK MANAGEMENT

Consultants say that the best background for the manager of a global network is a bachelor's degree in computer science or engineering, along with a master's degree in business or management and experience with a multinational company.

The global network manager also needs vision, adds Einar Stefferud, president of Network Management Associates, Inc., a strategic planning company in Huntington Beach, Calif.

The manager should be able to anticipate technological developments, the needs of customers and changes in the international business environment and understand how they will affect a corporation.

Harbert is a Boston-based free-lance writer specializing in computers and electronics.

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ORGANIZATION

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Ford Aerospace Space Information Systems Operations (SISO), based in the Houston, Texas area since 1963, designs, develops, builds, integrates, and installs information handling, processing and routing systems, special ground and flight hardware and software, and provides associated training and documentation services. SISO has been instrumental in all phases of ground support technology for space programs, meeting significant challenges in mission control, data systems development of satellite applications and information retrieval and analysis systems.

Working at Johnson Space Center, SISO is designing and building the first Payload Operations Control Center for Space Shuttle payloads. In addition to manned spaceflight support in real-time telemetry processing systems for Gemini, Apollo, Skylab, and the Shuttle, SISO has significant expertise with medical and logistics information systems, flight simulation systems, and and checkout systems for hardware and software, data acquisition systems, and imagery processing systems.

As SISO continues to meet the challenges of the future, we recognize that our employees are essential to continuing our tradition of leadership. We will continue to seek out only the most qualified individuals to add to our strong staff of diverse technical talent. We encourage highly skilled professionals who want to pursue a career on the leading edge of technology to join us as we prepare for the next era of space exploration.

SKILL MIX TARGETED

SOFTWARE ENGINEERS - Requires 2+ yrs. exp. in UNIX, or "C" and ADA and systems level software design and coding, as well as systems testing and integration.

SENIOR SOFTWARE ENGINEERS - 5+ yrs. exp. in requirements definition test development of real-time user interface applications software and control & monitor applications systems. Exp in UNIX, OS, and "C" programming language required. Exp. in graphics (GKS, X-Windows) a plus. Prior exp. developing software in accordance with MIL-STDS 483, 490 and 1521 is desired.

NETWORK ENGINEERS - Requires 5+ yrs. exp. in software or hardware engineering, design and implementation. Recent exp. in LAN systems for Distributed Processing Architectures in "C" and UNIX. Exp. with ISO and FDDI Standards a +.

DATABASE SPECIALIST - Requires 8+ yrs. exp. in systems analysis and design including recent data modeling and database administration. Exp. with ORACLE, SYBASE and FOCUS a plus.

SECURITY SYSTEMS SPECIALIST - 5+ yrs. exp. in design, analysis, development and integration of large ground data processing systems to include application of security requirements to data processing and communications systems. COMSEC and TEMPEST application exp. also required.

PROGRAMMER/ANALYST - 1+ yrs. exp. in software development utilizing "C" programming language on UNIX based systems including design, coding, checkout and integration. Exp. with GKS Graphics, X-Window and UNIFY DBMS a plus.

HARDWARE ENGINEERS - Requires 5+ yrs. exp. in Micro hardware engineering, design test implementation with an emphasis on data communications and ground support systems required. Detail analog, digital and microprocessor design with assembly and "C" exp. a plus.

ENGINEERING SPECIALIST - Requires 8+ yrs. exp. in analysis and design of spacecraft communications networks, real-time command and telemetry data systems definition and network management and control.

SYSTEMS ENGINEER - Requires 5+ yrs. exp. Design and Specifications of large scale command and control data systems.

SYSTEMS ENGINEER - Requires 3+ yrs. exp. Development of computer-based ground data processing systems, with systems engineering exp. in the aerospace industry.

HUMAN FACTORS ENGINEER - Requires 3 yrs. exp. and a working knowledge of MIL-STD 1472 and Military Handbook 46855, VDT display formatting techniques.

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HARDWARE ENGINEERS - Requires 3 to 5 yrs. exp. in Graphics Display Systems or Video Distribution Systems. Good knowledge of Digital Electronic Systems.

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IMS APPLICATIONS DESIGN ENGINEER required. Will design, code, and implement information systems in a commercial environment. Analyze user specifications and prepare problem resolutions and cost/manpower estimates as required. Will utilize structured design and analysis techniques with TSO, PL1, and Cobol programming languages and OS JCL, ISPF, IMS DB/DC and Assembler coding. Will provide documentation for marketing and maintenance purposes. Applicants required to have a bachelors degree in math, computers or engineering with at least two years IMS DB/DC PL/1 and Assembler in program design environment. The two years of experience must include at least six months programming design work with each of TSO, ISPF and OS JCL and at least one year of program design work in Cobol. Annual salary will be $41,000 per year for a 40-hour work week. Additional salary up to $48,000 per year may be paid if education and experience warrant. Interested applicants contact the Oklahoma Employment Security Commission, 3105 E. Skelly Drive, Tulsa, OK 74105 (ID# 7202). Phone (918) 749-6861. Refer to job order number 081242. Ad paid by an equal opportunity employer.

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MARKETPLACE

Disinfectants for disk drives

Scanners can find viruses, but the best defense is cautious management

BY SIMSON L. GARFINKEL
SPECIAL TO CW

John McAfee does not look forward to Friday the 13th. As president of the Computer Virus Industry Association in Agnew, Calif., each Friday the 13th he is swamped with phone calls from people whose hard disks have been wiped clean by pesky electronic vermin.

Most of the calls are from people running a personal computer-based program McAfee sells that searches for PC viruses.

There are probably fewer than a dozen such programs on the market today. They come in two varieties — monitors and scanners. A monitor intercepts system function calls that are questionable or dangerous, such as an instruction to reformat the hard disk. It then asks the user to confirm the function before execution.

Scanners, including McAfee's Virus-Scan, look for the signatures — unique sequences of machine instructions — of known viruses. Obviously, scanner programs are useless against a new virus. But since most infections are caused by viruses that have been around for years, that limitation isn't a major problem.

Tabulating the results of customer calls, McAfee discovered that 85% of all infections are caused by four viruses: Stoned, Ping-Pong, Disk-Killer and Jerusalem-B, which alone accounts for more than 60% of infections.

Unfortunately, new breeds of viruses have appeared that can evade monitors and scanners. According to McAfee, most newer viruses include techniques for bypassing monitors. New "stealth viruses" evade scanners by taking over low-level computer functions.

The only safe way to scan for a virus is to boot the PC with a floppy disk known to be free of infection and run the scan program from it. Once a computer is known to be virus-free, run the scan program on every new floppy disk — even shrink-wrapped software.

Some software publishers go to extra lengths to avoid shipping computer viruses in programs that they sell. The reason: Besides wiping out data, a virus could wipe out a company's reputation.

To avoid accidently shipping infected programs, Microsoft Corp. starts with two computers that have never been used. Engineers load fresh copies of the operating system and compilers and then transfer the application's source code to the computers over a serial line. "Serial ports don't introduce viruses," says Mike Maples, Microsoft's vice-president of application development.

When the transfer is completed, engineers do a byte-by-byte comparison of the two applications to make sure they are identical. Then they run a series of tests in which they set the machines to unusual dates, like Friday the 13th. Microsoft is also developing techniques by which application programs will automatically check themselves for viruses each time they are run. By using a variety of different techniques and keeping them secret, the company hopes to keep one step ahead of this form of programmed vandalism.

In the lobby of Lotus Development Corp.'s headquarters in Cambridge, Mass., an IBM Personal System/2 runs a virus scan program 24 hours a day. With both 5¼-in. and 3½-in. disk drives, the computer makes it easy to scan any disk being brought into the building.

"It is not a piece of software that will give you 100% insurance that you don't have a virus," says Dan Rattner, director of security and risk management at Lotus. "It is really meant to sensitize our employees and visitors to the issue of data security and integrity."

In many ways, software publishers are in an "arms race" with virus writers, McAfee says: "It's sort of a never-ending spiral. Virus designers get more sophisticated, and the antiviral programs get more sophisticated."

At least one expert is optimistic about the outcome of this struggle. As PC hardware and software continue to evolve, the current generation of computer viruses will die out, predicts Eugene Spafford, a computer security specialist at Purdue University.

Computers running operating systems that prevent users from modifying system files, such as Unix, are far more resistant to viruses than those using operating systems such as DOS, he says.

Furthermore, while hardware and well-known software programs have been shipped with viruses, the probability of being a victim is really quite small. Spafford says: "It's like reading newspaper accounts of terrorist hijacking of planes. There are thousands of flights. You are more likely to be in a car crash."

Computer users are far more likely to lose their data because of a power failure, a fire or operator error. Standard measures, such as making backups and having good password routines, go a long way toward preventing transmission of viruses, says Lance Hoffman, a professor of computer science at George Washington University.

Unfortunately, many computer centers are not run very well, Hoffman contends. He says he thinks viral protection eventually will be built into hardware, but not for many years. Calling the Internet worm the Three Mile Island of computer security, he says "it may take a Chernobyl to wake up the industry."

Garfinkel is a free-lance writer and computer consultant based in Cambridge, Mass.

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The BoCoEx index on used computers

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XT Model 086	$500	$700	$350
XT Model 089	$600	$700	$475
AT Model 099	$1,150	$1,375	$700
AT Model 239	$1,250	$1,325	$ 850
AT Model 339	$1,370	$1,400	$1,000
PS/2 Model 50	$2,060	$2,200	$2,000
PS/2 Model 60	$2,060	$2,200	$2,000
Compaq Portable II	$1,475	$1,725	$1,400
Portable III	$2,300	$2,500	$1,900
Portable 286	$1,700	$2,000	$1,500
Plus	$750	$950	$675
Deskpro	$825	$900	$800
Deskpro 286	$1,400	$1,625	$1,300
Deskpro 386/16	$2,500	$2,750	$2,475
Apple Macintosh 512	$550	$775	$450
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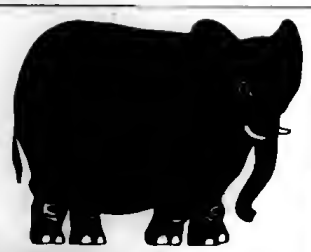

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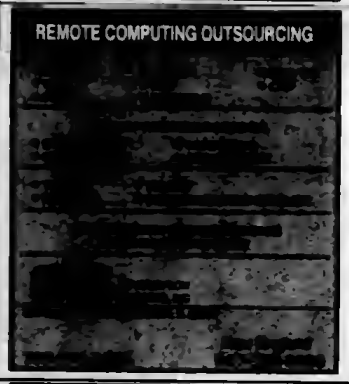

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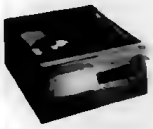

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Trying to find the time to train

Thinking ahead and following up can leverage scarce training time

BY MARK DUNCAN
SPECIAL TO CW

Too often, information systems professionals are forced to squeeze training into a busy schedule. In the same way, users often must work hard to find an island of training amid a swamp of essential day-to-day work.

Fortunately, there are several things a training organization can do before and after class to make the most of precious training time. Naturally, their relevance will vary with the type of course, its duration and other factors, but any of following may be appropriate:

• **Learn students' objectives.** Trainers should know the specific goals that individuals bring to a training program. Many instructors ask at the start of sessions and get standard replies: "My team leader signed me up. It's a job requirement. I need to know more about the topic."

A better idea, if possible, is to call students in advance. That way the trainer is apt to get more genuine (and perhaps clearer) objectives. For instance: "Our team is weak in this area, and I'd like to remedy the deficiency. This will help me become the lead analyst on the next project." Knowing goals beforehand can give the trainer some lead time to think about how best to address objectives. It also may encourage students to think a bit more about motives before coming to class.

• **Conduct a pre-class visit.** An alternative is to invite students to visit the trainer before the course. Seeing the training facilities can help minimize the time a student needs to settle in once the training actually begins. While getting acquainted, students can also talk about their objectives, ask about the agenda and discuss other aspects of the course. Learning more about the scope of the course may provide them with a balanced perspective and prompt questions about possible deficiencies.

• **Preview material.** Another good idea is to distribute training material a week or two before a course. This step lets students get comfortable with the materials and find portions of particular interest. An unfamiliar style or format can distract students during class.

• **Recognize participants.** Training is rarely seen as an accomplishment. One way to add significance is to recognize participants who have successfully completed courses.

Many organizations hand out certificates for completion of training programs. A certificate is particularly impressive when delivered by an individual's manager. Better still is to have a senior manager do the honors. Although certificates traditionally are awarded on the last day of class, presenting them in the individual's work area would raise the level of recognition.

Another good tactic is to announce training achievements in company newsletters, on bulletin boards and in management reports.

• **Repeat training.** If possible, staff members should get the opportunity to repeat training. While on-the-job experience is the best follow-up, individuals may want a refresher. Such a session can help reinforce areas in which students are weak or revive skills that they haven't applied. While repeating an entire course may not be necessary, sitting in on parts of one might be helpful as long as it doesn't disrupt other students.

Follow-up training can also take the form of overview presentations, self-paced computer-based training or even video summaries of courses.

• **Compile an expert contact list.** Even the best of students need questions answered after training is completed. Perceptive trainers foster an open-door policy for consultations, but as time passes, many students become reluctant to approach instructors.

Most staff members, however, feel comfortable seeking help or technical advice from peers or other co-workers. The trainer can capitalize on this inclination by building a list of experts willing to be contacted by students. Giving such a list to students will ease the trainer's burden and help facilitate communication and cross-training.

• **Develop a glossary.** IS people may be up to snuff on computer terminology but less knowledgeable about business terms employed by users. The reverse may be true for users. One simple but helpful solution is to print a glossary as a reference card that can be carried in a pocket or placed on a desktop. These cards are also good for summarizing highlights of courses and for listing tips and techniques.

• **Encourage follow-up projects.** Training that is not timely and relevant is not effective. It must be timely in two ways: The students must be well-prepared for training, and they must put into practice what has just been learned. Trainers should make instruction timely by helping students prepare and by trying to ensure that they can apply their new knowledge quickly back on the job.

These ideas are simple but effective. Trainers have students in their possession for a limited time; wise instructors will seize every opportunity to make the most of that time.

Duncan is a quality assurance manager at a large Dallas bank.

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BRAZIL: Roy Knoll, Computerworld do Brasil Ltda., Praca Floriano, 19/26 Andar, 20031 Rio de Janeiro, RJ Brasil. Phone: (011) 55 21 240 8225. Telex: (391) 21 30830 BR. Sao Paulo: Computerworld do Brasil Ltda., Rua Joaquim Floriano, 488/3 andar-CEP 04534 Sao Paulo, Brasil. Tel: (011) 55 11 853 6166. Telex: (391) 1132017 (WDBD BR).

COLOMBIA: Rodrigo Asenjo, La Rueca Ltda., Transv. 42B No. 38 A/06, Apartado 98005, Bogota, D.E. Colombia. Tel: (011) 57 1 271 3160.

DENMARK: Preben Engell, IDG Denmark A/S, Hagedammen 4 DK 2900 Valby Denmark. Tel: (011) 45 38 443900. Telex: (855) 31566. FAX: (011) 45 38 442033.

FRANCE: Francois Chaumereuil, IDG Communications S.A., Immeuble La Fayette, 2, Place des Vosges, Cedex 65 92051 Paris la Defense, France. Tel: (011) 33 1 4904 7900. Telex: (842) 613234F. FAX: (011) 33 1 4904 7800.

HUNGARY: Daniel Felner, Computerworld Informatika Co., PF. 386, 1536 Budapest, Hungary. Phone: (011) 36 1 226 469. Telex: (861) 226307 (KSHP H). FAX: (011) 36 1 433 365.

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JAPAN: [illegible], IDG Communications/Japan, Kioicho TBR Bldg., 5-7 Kojimachi, Chiyoda-ku Tokyo 102, Japan. Tel: (011) 81 3 222 6411. Telex: (781) 252 4217. FAX: (011) 81 3 222 6066.

MEXICO: Henry Morales, Computerworld Mexico S.A. de C.V., Oaxaca 21 2, Mexico City 7 D.F. Colonia Roma, 06700 Mexico. Tel: (011) 52 5 514 4218 or 6308. Telex: (383) 177 1035 (ACHAME). FAX: (011) 525 614 4680.

THE NETHERLANDS: Wout Benning, IDG Communications B.V., de Paulus Potterstraat 15, 1071 DA Amsterdam, The Netherlands. Tel: (011) 31 20 664 6426/664 6814. Telex: (844) 18242 (CWCOM NL). FAX: (011) 3120 796 006.

NEW ZEALAND: Martin Taylor, IDG Communications Ltd., 2nd Floor, 15 Augustus Terrace, Parnell, Auckland 1, New Zealand. Phone: (011) 64-9-779-902. Fax: (011) 64 9 774 606.

NORWAY: Morten Hansen, CW Norge A/S, Hovfaret 4 N-0275, Oslo 5, Norway. Phone: (011) 472 847729. Telex: (856) 79476 (CW NOR N). FAX: (011) 47 [illegible] 0152.

PEOPLE'S REPUBLIC OF CHINA: Shen Yao, China Computerworld, 74 Lu Gu Road, Box 750, Beijing 100039, People's Republic of China. Tel: (011) 861 81 0044. Telex: (716) 222214 (CCW CN).

SINGAPORE: Asia Computerworld Communications, 04-07 Parkway Builders Centre, No. 1 Marine Parade Central, Singapore 1544, Republic of China. Phone: (011) 65 345 8383. Telex: (786) 39 37003 (Cpmsan). FAX: (011) 65 345 [illegible].

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SPAIN: Paco Zabala, CW Communications, S.A., Rafael Calvo, 18, 4B, 28010 Madrid, Spain. Phone: (011) 34 1 419 2014. Telex: (831) 46622 (CW E). FAX: (011) 34 1 419 6104.

SWEDEN: Bengt Marnfeldt, CW Communications AB, Sodra Hammarbyhamnen 22, S-116 41 Stockholm, Sweden. Tel: (011) 46 8 [illegible] 9130. Telex: (854) 14904 S (NOVACW). FAX: (011) 46 8 [illegible] 3102.

SWITZERLAND: Gotthard Oetterstetter, CW Publikationen AG, Witikonerstrasse no. 15, Postfach 253, CH 8030 Zurich, Switzerland. Phone: (011) 41 1 55 10 77. Telex: (845) 815 715 (CWCI CH). FAX: (011) 41 1 55 1135.

TAIWAN: David Chu, IDG Communications/Taiwan, 4F 2, No. 137, Fu Hsin South Road, Sec. 1, Taipei, Taiwan. Phone: (011) 886 2 776 4553. Telex: (785) 14163 (ACE-GROUP). FAX: (011) 886 2 721 6444.

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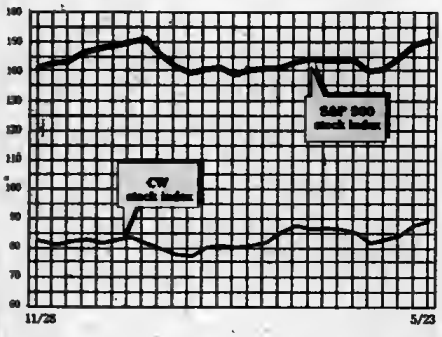

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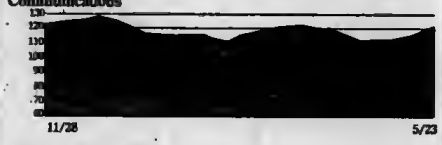
Software & DP Services	122.8	126.9
Semiconductors	61.5	64.1
Peripherals & Subsystems	85.5	89.3
Leasing Companies	88.8	84.7
Composite Index	87.4	89.5
S&P 500 Index	149.2	151.4

Communications



Computer Systems

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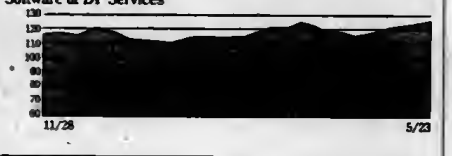
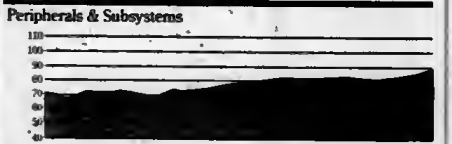


Semiconductors

Peripherals & Subsystems



Leasing Companies

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, MAY 23, 1990

Communications and Network Services

Exch	Company	52-Week Range High	52-Week Range Low	Price Close May 23, 1990	Week Net Change	Week Pct Change
N	AMERICAN INFO TECHS CORP	68	56	63.875	0.4	0.6
Q	ANDREW CORP	69	30	23	-0.5	-2.1
Q	ARTEL COMM CORP	10	5	6.375	0.8	15.9
N	AT&T	47	35	43.128	0.4	0.9
Q	AVANTEK INC	7	2	3.063	0.1	2.1
N	AYDIN CORP	21	14	14.5	0.8	1.8
N	BELL ATLANTIC CORP	57	43	52.875	0.4	0.7
N	BELLSOUTH CORP	59	46	56.625	0.0	0.0
Q	COMPRESSION LABS INC	15	7	12.75	1.8	14.8
Q	COMTEL CORP	37	23	27.75	0.3	0.9
Q	DATA SWITCH CORP	9	2	3.25	0.4	13.0
Q	DIGITAL COMM ASSOC	26	17	25.25	2.0	8.8
Q	DYNATECH CORP	21	16	15.625	0.6	4.2
Q	FIBRONICS INTNL INC	9	6	8.75	1.4	18.6
Q	GANDALF TECHNOLOGIES	7	3	2.938	-0.3	-7.8
N	GENERAL DATACOMM INDS	7	3	3.5	-0.1	-3.4
N	GTE CORP	72	52	68	0.1	0.2
Q	INFOTRON SYS CORP	13	4	4.125	-0.1	-2.9
N	ITT CORP	60	51	56.375	-0.1	-0.2
N	M A COM INC	9	3	3.75	-0.3	-6.3
Q	MCI COMMUNICATIONS CORP	46	31	43	2.1	5.2
N	NETWORK EQUIP TECH INC	34	9	10.625	-0.4	-3.4
Q	NETWORK SYS CORP	16	7	14.625	1.8	12.5
N	NORTHERN TELECOM LTD	69	17	26	0.8	1.0
Q	NOVELL INC	49	24	44.25	4.3	10.8
N	NYNEX CORP	89	75	86.125	-0.6	-0.7
N	PACIFIC TELESIS GROUP	52	26	46.75	-0.4	-0.8
A	PENRIL CORP	7	4	7.125	0.9	14.0
N	SCIENTIFIC ATLANTA INC	27	17	26.75	2.0	8.1
N	SOUTHWESTERN BELL CORP	69	50	57.125	0.0	0.0
Q	3 COM CORP	26	10	13.75	0.9	6.8
N	U S WEST INC	41	33	36.75	0.0	0.0

Computer Systems

Exch	Company	52-Week Range High	52-Week Range Low	Price Close May 23, 1990	Week Net Change	Week Pct Change
Q	ALLIANT COMPUTER SYS	8	4	7.125	0.9	14.0
Q	ALPHA MICROSYSTEMS	9	3	3.625	0.8	28.1
Q	ALTOS COMPUTER SYS	9	5	5.5	0.1	2.3
A	AMDAHL CORP	23	11	15.75	0.6	4.1
Q	APPLE COMPUTER INC	50	32	42	0.5	1.2
Q	AST RESH INC	25	7	24.625	2.4	10.7
N	BOLT BERANEK & NEWMAN	9	4	5.125	0.4	7.9
N	COMPAQ COMPUTER CORP	123	75	122.875	8.6	7.7
N	COMMODORE INTNL	16	6	7.5	-0.1	-1.8
N	CONTROL DATA CORP	25	16	20.25	0.0	0.0
N	CRAY RESH INC	54	31	46	0.4	0.8
Q	DAISY SYS CORP	5	0	0.469	0.0	-6.2
N	DATA GEN CORP	16	6	6.875	0.6	8.2
N	DATAPOINT CORP	6	2	2.625	-0.1	-4.5
Q	DELL COMPUTER CORP	11	5	10.125	0.8	8.8
N	DIGITAL EQUIP CORP	100	70	93.25	4.9	5.8
N	FLOATING POINT SYS INC	4	0	0.813	0.0	0.0
N	HARRIS CORP	40	28	34.625	-0.6	-1.8
N	HEWLETT PACKARD CO	58	40	47.375	1.3	2.7
N	HONEYWELL INC	103	73	69.875	2.6	2.7
N	IBM	116	93	116.75	3.4	2.9
Q	INFORMATION INTL INC	16	12	11.8	-0.4	-3.2
Q	IPL SYS INC	14	6	10.75	0.8	7.5
N	MAI BASIC FOUR INC	7	2	2.75	0.1	4.8
N	MATSUSHITA ELEC INDL LTD	180	123	147.25	-0.8	-0.5
Q	MENTOR GRAPHICS CORP	25	14	24	0.8	3.2
N	NBI INC	3	0	0.813	0.0	11.4
N	NCR CORP	72	53	69.625	1.3	1.8
Q	PYRAMID TECHNOLOGY	35	6	34.75	2.0	6.1
Q	SEQUENT COMP SYS INC	30	11	69.25	3.0	11.4
Q	SHAREBASE CORP	3	0	0.563	0.1	26.5
Q	SUN MICROSYSTEM INC	33	13	32.25	2.8	5.4
Q	SYMBOLICS INC	2	0	0.8	-0.1	-11.2
N	TANDEM COMPUTERS INC	60	16	28.625	2.0	7.5
N	TANDY CORP	49	30	33.625	-0.3	-0.7
N	ULTIMATE CORP	12	6	6.875	-0.1	-1.8
N	UNISYS CORP	28	12	14.125	0.8	1.8
A	WANG LABS INC	6	4	4.125	-0.1	-2.8

Software & DP Services

Exch	Company	52-Week Range High	52-Week Range Low	Price Close May 23, 1990	Week Net Change	Week Pct Change
Q	AMERICAN MGMT SYS INC	16	11	14.75	0.4	2.8
Q	AMERICAN SOFTWARE INC	26	14	24.5	2.5	11.4
N	ANACOMP INC	6	3	2.75	-0.4	-12.0
Q	ANALYSTS INTL CORP	20	14	18.5	0.6	3.5
Q	ASHTON TATE	24	9	12.125	0.0	0.0
N	AST COMPUTER SYS INC	16	7	8.625	1.1	13.2
N	AUTO DATA PROCESSING	69	49	57.375	1.6	2.9
Q	AUTODESK INC	53	33	61.75	1.5	3.0
Q	BMC SOFTWARE INC	26	12	25	-0.5	-2.0
N	BUSINESSLAND INC	14	7	8.625	-0.6	-6.8
Q	COGNOS INC	8	4	7.125	0.1	1.8
N	COMPUTER ASSOC INTL INC	22	11	15.25	0.1	0.8
Q	COMPUTER HORIZONS CORP	14	7	14.25	1.8	14.0
N	COMPUTER SCIENCES CORP	69	40	45.75	0.5	1.1
N	COMPUTER TASK GROUP INC	15	9	11.8	0.8	7.0
Q	COMSHARE INC	44	31	41.5	1.3	3.1
Q	CORPORATE SOFTWARE	16	8	13.5	0.0	0.0
Q	GENERAL MTRS (CLS E)	37	24	28.75	3.8	11.4
Q	HOGAN SYS INC	7	4	3.75	-0.1	-3.2
Q	INFORMIX CORP	17	6	18	0.8	5.3
Q	INTELLICORP INC	7	3	8.25	0.8	4.2
Q	LEGENT CORP	32	19	26.25	4.0	18.0
Q	LOTUS DEV CORP	38	21	34	-0.6	-1.4
Q	MICROSOFT CORP	76	28	75.875	11.1	17.2
Q	NATIONAL DATA CORP	35	13	14.875	-0.4	-2.8
N	ON LINE SOFTWARE INTL INC	11	6	6.8	0.3	3.0
Q	ORACLE SYS CORP	28	14	19.75	1.1	8.0
N	PANSOPHIC SYS INC	19	10	13.75	1.1	8.8
Q	PHOENIX TECHNOLOGIES INC	15	2	2.75	-0.2	-6.4
Q	POLICY MGMT SYS CORP	28	28	28.5	-0.3	-0.7
Q	PROGRAMMING & SYS INC	23	19	22.375	0.4	1.7
Q	RELATIONAL TECH INC	11	6	7.625	0.3	3.4
N	REYNOLDS & REYNOLDS CO	34	19	22.625	1.1	5.2
Q	SAGE SOFTWARE INC	15	7	15.375	2.0	15.0
Q	SEI CORP	21	16	19.25	-0.5	-2.5
Q	SHARED MED SYS CORP	18	12	13.125	0.6	5.0
Q	SOFTWARE PUBG CORP	27	13	27	1.8	6.4
N	STERLING SOFTWARE INC	11	6	10.375	0.8	7.8
Q	SUNGARD DATA SYS INC	26	15	22	0.8	3.5
Q	SYSTEMATICS INC	46	30	45	0.8	1.7
N	SYSTEM CENTER INC	26	17	21	-0.6	-2.9
N	SYS. SOFT INC	26	14	26.5	3.0	12.5
Q	WORDSTAR	3	1	1.125	0.1	5.8

Semiconductors

Exch	Company	52-Week Range High	52-Week Range Low	Price Close May 23, 1990	Week Net Change	Week Pct Change
N	ADV MICRO DEVICES INC	11	7	11.125	1.1	11.3
N	ANALOG DEVICES INC	12	7	8	0.4	4.9
Q	ANALOGIC CORP	11	9	9.5	-0.1	-1.3
Q	CHIPS & TECHNOLOGIES INC	26	16	21.25	0.6	2.4
N	INTEL CORP	49	28	48	3.3	7.3
Q	MICRON TECHNOLOGY INC	26	7	14.625	-0.6	-4.9
N	MOTOROLA INC	80	51	80	5.6	7.9
N	NATL SEMICONDUCTOR	9	5	8.625	0.6	7.8
N	TEXAS INSTRS INC	47	26	43.375	2.8	6.8
A	WESTERN DIGITAL CORP	13	9	13	0.5	4.0

Peripherals

Exch	Company	52-Week Range High	52-Week Range Low	Price Close May 23, 1990	Week Net Change	Week Pct Change
Q	ALLOY COMP	3	0	0.75	-0.3	-25.0
N	AM INTL INC	6	2	2.25	-0.3	-10.0
Q	AUTO TROL TECH CORP	9	2	2.625	0.0	0.0
Q	BANCTEC INC	22	13	21.125	0.8	8.7
A	COGNITRONICS CORP	9	3	4.75	-0.9	-10.6
Q	CONNER PERIPHERALS	26	16	25.25	2.8	12.8
A	DATARAM CORP	19	6	15.875	0.9	5.8
N	EASTMAN KODAK CO	52	38	40.625	0.3	0.8
N	E M C CORP MASS	7	3	9	0.8	9.1
Q	EMULEX CORP	11	4	8.125	0.0	0.0
Q	EVANS & SUTHERLAND	49	17	32.375	-0.4	-1.1
Q	ICOT CORP	3	1	1.375	0.1	10.0
Q	INTERLEAF INC	9	6	6.375	-0.1	-1.8
Q	IOMEGA CORP	6	3	4.063	0.0	0.0
Q	LEE DATA CORP	4	1	1.313	0.0	0.0
Q	MASSTOR SYS CORP	4	1	1.375	0.1	4.7
Q	MAXTOR CORP	16	7	15.75	1.0	6.8
Q	MICROPOLIS CORP	6	3	8.313	2.8	54.7
N	MINNESOTA MNG & MFG CO	89	68	82.75	-0.9	-1.0
Q	PERSONAL COMP PRODUCTS INC	6	4	4.25	0.1	3.0
Q	PRINTRONIX INC	14	7	15.125	0.3	1.8
N	QMS INC	18	6	17.75	2.0	12.7
Q	QUANTUM CORP	22	7	20.875	3.8	16.8
N	RECOGNITION EQUIP INC	13	5	5.125	-0.1	-2.4
Q	REXON INC	6	6	6.375	0.5	8.6
Q	SEAGATE TECHNOLOGY	20	10	13.875	-0.5	-3.5
N	STORAGE TECH CORP	30	6	28.625	1.0	3.8
Q	TANDON CORP	2	0	2	0.1	8.7
N	TEKTRONIX INC	24	12	18.75	1.1	6.6
Q	TELEVIDEO SYS INC	1	0	0.25	0.0	14.2
N	XEROX CORP	69	46	46	-0.9	-1.8

Leasing Companies

Exch	Company	52-Week Range High	52-Week Range Low	Price Close May 23, 1990	Week Net Change	Week Pct Change
Q	AMPLICON INC	17	7	7	-0.8	-9.7
N	CAPITAL ASSOC INTNL INC	8	3	3.25	0.3	8.3
N	COMDISCO INC	24	17	18.75	-0.3	-1.3
Q	CONTINENTAL INFO SYS	1	0	0.156	-0.1	-33.3
Q	LDI CORPORATION	16	13	14.75	-0.3	-1.7
Q	PHOENIX AMERN INC	6	3	4.125	0.0	0.0
Q	SELECTERM INC	6	6	5.75	0.0	0.0

EXCH: N = NEW YORK; A = AMERICAN; Q = NATIONAL

Soar deal

Novell, Lotus post high gains without being honeymooners

Bang, zoom! Right to the moon. That's what happens to certain technology stocks when billion-dollar mergers are nixed — at least that's what happened to Novell, Inc. Rocketing 4¾ points on Thursday alone, Novell reached a new high of 49, climbing a total of 8⅞ points for the week.

Although Novell's would-be partner did not fare as well, Lotus Development Corp. did gain 2 points to close at 36⅝. Rival software maker Microsoft Corp. was not to be outdone. After the news that the Novell/Lotus deal had fallen through and after unleashing Windows 3.0 on the world, Microsoft shot up 8⅛ points to 76½.

Trading for the week was hot in other technology sectors, too. Motorola, Inc. gained 7⅛ points to 83¾, with the announcement of a cellular phone deal with Japan apparently fanning the flames. Other semiconductor companies also advanced, including Intel Corp., up 3⅛ points to reach a new high of 48¼. National Semiconductor Corp. inched up ⅝ of a notch to 8⅜.

Elsewhere, Compaq Computer Corp. continued its upward trend, rising 3⅝ points to 122 — yet another new high. IBM was up 3⅜ points to 118¾, while Digital Equipment Corp. gained 2⅞ to 92⅛.

KIM S. NASH

NEWS SHORTS

It's a small, small world

Information technology managers in Europe share some basic concerns with their U.S. counterparts, according to a study released last week by Chicago-based Andersen Consulting. Andersen found that the top three issues for Europeans were integrated data processing, communications and operations; training and education of systems users and information systems staffs; and developing a quicker response to sudden changes in business conditions and increased user demands. Forty-two percent of the managers said they use computer-aided software engineering technology and other productivity tools, and 66% said they will use common applications systems in the future. Andersen surveyed more than 560 managers at medium-size and large companies in 11 European countries.

Exports bring $100,000 fine

Microway, Inc. in Plymouth, Mass., consented last week to pay a $100,000 fine and donate goods and services to local residents to settle charges that the privately held company illegally shipped computer parts to its London subsidiary in 1985 and 1986. The action resolves the 5-year-old case brought by the U.S. Department of Commerce. According to Ann Fried, president of the personal computer board maker, the matter relates to the "interpretation of export laws as they relate to intercompany transfer of goods between Microway and its London subsidiary." She added that the primary reason Microway paid the fine was that "we couldn't afford to take the matter to court."

GM does dishes

General Motors Corp. last week announced plans to put a satellite dish on the premises of all of its truck and car dealers. The two-way network, Pulsat, will support applications such as dealer ordering of vehicles and accessing of updated warranty data. GM will also use the link for video transmissions on subjects such as product information and training. Similar to several other automakers' networks, Pulsat will involve 10,000 satellite dishes by its scheduled completion in late 1992, GM said.

Chicago exchanges team up

Globex, the after-hours electronic commodities trading system and network developed by the Chicago Mercantile Exchange, will be the basis of a unified system for both the Mercantile Exchange and the Chicago Board of Trade, the two agreed last week. The Board of Trade's own after-hours system, dubbed Aurora, was announced last spring but never implemented. Chicago's two commodity exchanges joined forces a day after Japan's Ministry of Finance finally approved the installation of Globex terminals in Japan. Globex, a joint project with Reuters Holdings PLC, is set to become operational in November.

Sprint touts single access point

Continuing the integration of its circuit and packet networks, U.S. Sprint Communications Co. said last week that it will soon provide access into both its packet- and circuit-switched networks over a single T1 line. Sprint's existing integrated T1 access partitioning capability allows users to allocate each of the 24 channels in a T1 line to different circuit-switched services. The new option lets users devote a 56K bit/sec. channel in the T1 to access the Sprintnet packet data network.

Defendant speaks out

The president of American Technology Trading Group Ltd. in San Francisco last week publicly denied U.S. government charges that he conspired to illegally ship a Control Data Corp. ETA 10 supercomputer to Bulgaria. Robert J. Wheeler, arrested two weeks ago, said through his attorney that he believed the computer was to be sent to a customer in Paris and claimed that he reported the situation to U.S. authorities when he learned the equipment was in fact destined for Bulgaria. Wheeler's attorney claimed that the entire transaction was a sting operation orchestrated by the U.S. government.

Bush technology policy under fire

Critics cite administration's 'inaction' on faltering high-tech industries

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — White House science adviser D. Allan Bromley told a U.S. Senate committee last week that the Bush administration plans to increase funding for research and development by $4.5 billion, or 7%, next year, but he was largely unsuccessful in convincing the panel that the president has a coherent strategy for boosting the competitiveness of beleaguered U.S. high-tech industries.

Citing a recent report comparing the performance of U.S. industry with its counterparts in Europe and Japan, Sen. Al Gore Jr. (D-Tenn.) said: "The only area in which we're holding our own is in artificial intelligence. Maybe we can use it to develop an artificially intelligent approach to technology policy. I'm not encouraged by the president's total inaction in this area."

Gore added, "We've seen Craig Fields fired, and he was the only one encouraging a technology policy." Fields was recently removed from his post as head of the Defense Advanced Research Projects Agency (DARPA), allegedly for angering the administration by trying to nurture budding technology in computers and related areas [CW, April 30].

Bromley did not respond to several barbs about Fields' removal. However, he did say DARPA should be guided by direct user requirements rather than notions of dual use, in which a new technology finds both commercial and military applications.

"The administration does not plan to curtail DARPA's investment in dual-use technologies, but the administration would be concerned over spending on technology with limited military application," Bromley said.

However, government help to the semiconductor industry, which has recently been a target for administration officials, is apparently safe for now.

"I'm quite confident we'll continue support for Sematech and, to the extent the budget allows, we'll increase it," Bromley said. Sematech is a consortium of U.S. semiconductor manufacturers that receives $100 million annually from DARPA.

Bromley challenged a common assertion that the U.S.' competitiveness problems are rooted in a lack of manufacturing expertise. In particular, he blamed the high cost of capital and an emphasis on short-term financial results.

To cure those ills, Bromley said, the president is seeking a cut in the capital gains tax, a cut in the double taxation of dividends and a permanent implementation of the research and development tax credit.

Industry representatives at the hearing were unimpressed. Griffith Resor III, president of MRS Technology, Inc., a manufacturer of flat-panel display products, said that the old notions of free markets and laissez-faire capitalism no longer work in a world in which governments increasingly team with industry.

"The administration continues to see the world as it used to be," Resor said. "The administration's technology policy must be classified. It's one of the best-kept secrets in Washington."

DEC

FROM PAGE 1

focus its marketing organization — historically its weakest point.

While no precise time frames for the business changes have been confirmed, the following programs are in the works:

- Tougher employee severance programs designed to reduce head count among DEC's 125,800 employees and extend beyond the manufacturing groups into field operations and administrative staff. DEC President Kenneth H. Olsen reaffirmed last week, however, that on companywide layoffs are planned.
- Reorganization along "lines of business" that function quasi-independently and are empowered to set prices. The 15 "application business units" established so far will be focused on specific markets such as small business, Unix workstations and financial and administrative systems.
- An overhaul of the sales compensation policies with a new program providing financial premiums that vary with sales volume. DEC currently offers $4,000 to $12,000 annual bonuses to their top sales performers, but the new policies will supposedly become more like direct commissions.

"We're not turning the company upside down, but we are making important refinements," a DEC spokesman said.

Stockholders may also be pleasantly surprised in 1991 if the 33-year-old company reverses its policy against paying dividends. In a speech last Thursday evening to some 120 industry analysts and consultants, Olsen acknowledged that his company "should have started paying dividends two years ago," according to three analysts present at the session.

"This is a very fast-moving industry, and Digital is rapidly coming to terms with the world changing faster than they thought," said Byron Walker, an analyst at Moody's Investors Service, Inc. in New York.

One place where things are moving a bit more slowly, however, is with the VAX 9000 mainframe. DEC is struggling with production and manufacturing problems surrounding its much-publicized mainframe, according to several analysts, and that is likely to delay full production and shipping until next quarter.

Senior DEC officials told analysts last week that the delays were not major, however, and were caused in part by the complexity of the operating system software. The DEC managers also said that about one-third of the orders for VAX 9000s were coming from new, non-DEC accounts — a surprising turn of events for a machine widely thought to appeal mainly to installed base customers.

Olsen also told industry analysts that a "RISC-y" VAX can be expected within the next two years, meaning a VAX/VMS machine that offers similar price/performance to Unix machines.

As for DEC's top layers of management, the latest company buzz is about Jack Smith, who is the newly titled senior vice-president for operations and considered second-in-command to Olsen.

Smith recently expanded his responsibilities over engineering, manufacturing and product marketing operations to include sales, industry marketing and services. Does this make him the heir apparent?

Probably not, most industry watchers agreed. "Ken is having too much fun. I don't think he wants to be given a figurehead role just yet," said Terry Shannon, an analyst at International Data Corp. in Framingham, Mass.

"The No. 2 position at DEC has not proved to be very durable in longevity," added Shao Wang, an analyst at Smith Barney, Harris Upham & Co. in New York, referring to Jack Shields, the former senior vice-president of sales and marketing at DEC.

Like other Wall Street watchers, Wang said it is the success of the VAX 9000 and improved profitability that matters most.

"All the rest of it," Wang said, "is noise."

Following the application trail

BY CHARLES VON SIMSON
CW STAFF

More than 35 applications, written specifically for the Microsoft Corp. Windows Version 3.0 applications programming interface and not previously available in the Windows graphical environment, will ship within the next 60 days, according to announcements made at Microsoft's product introduction last week.

Heading the list of Windows 3.0-specific applications is Asymetrix Corp.'s Tool Book 1.0, an application development utility that will be included with every retail, English-language version of Windows. Two Tool Book applications — Day Book, a personal organizer, and Introducing Tool Book, an on-line brochure that provides a tour of Tool Book's functions and features — will also be included.

Tool Book's architecture was designed around object-oriented programming, a feature that enabled impressive ease of use for simple applications in a demonstration for *Computerworld*.

Informix Software, Inc. said it will make its Wings spreadsheet available for the first time as a Windows application by the end of next month. The product has received high marks from users for its support of three-dimensional graphs and images, as well as its support for a broad number of graphical platforms, including IBM and Microsoft's OS/2 Presentation Manager, Sun Microsystems, Inc.'s Open Look, the Open Software Foundation's Motif and Next, Inc.'s Next Step.

Xerox support

Xerox Corp.'s Ventura Publisher, which previously ran under Digital Research, Inc.'s Gem interface, has been rewritten to support the newest version of Windows. The system will support such native Windows features as Clipboard and will be compatible with Windows-supported printers and displays.

Microsoft also introduced a presentation graphics package, Powerpoint for Windows Version 1.0, that offers several draw and data input features.

In addition to the product introductions, more than 100 vendors announced plans to upgrade over 200 existing Windows packages from earlier versions of Windows to full Version 3.0 compatibility and will be ready to ship within 60 days.

Some notables include the following:

- Aldus Corp.'s Pagemaker Version 1.01.
- Adobe Systems, Inc.'s Streamline and Illustrator Version 1.1.
- Computer Associates International, Inc.'s Cricket Graph and Cricket Presents Version 1.2.
- Corel Systems Corp.'s Corel Draw Version 1.2.
- Digital Communications, Inc.'s Crosstalk for Windows Version 1.1.
- Gupta Technologies, Inc.'s SQL Windows Version 1.2.
- IBM's Desktop Software Current Version 1.1.
- Lotus Development Corp.'s Notes Version 1.1.
- Samna Corp.'s Ami Professional Version 1.5.

Newer Wave

Using the memory management of Microsoft Corp.'s new Windows 3.0 release, Hewlett-Packard Co. released New Wave Version 3.0 last week.

With this version, the object-oriented application management and development personal computer software includes a long-promised task-automation facility, called Agent.

New Wave 3.0, which runs on top of Windows, also requires less memory to run than was needed with the previous release — 2M bytes on a computer that is powered by an Intel Corp. 80386 processor, according to Webb McKinney, general manager of the company's Information Systems Division in Santa Clara, Calif.

An Intel 80286-based computer or a system running the previous version requires 3M bytes to operate using New Wave.

"This will be a racehorse. It will make or or break New Wave," said Jim Hammons, research director at The Sierra Group, a market research firm based in Phoenix.

Hammons said that New Wave has yet to catch on with users, either because they are waiting for this version — "the real version with features HP has been talking about" — or because HP has yet to establish a market presence for the software.

New Wave will reportedly be available in August for $195, or $50 for current users to upgrade the previous version.

Future releases will allow New Wave to run on IBM's OS/2 and on Unix, according to McKinney.

J. A. SAVAGE

Windows

FROM PAGE 1

Bluestein, a software analyst at Forrester Research and one of the authors of the report. "Today, the MIS guys are the only ones doing anything with OS/2. It's not on anyone's desk; why should it be? Windows [3.0] is a quick fix."

Critics contended that users will soon begin to run up against the lack of multitasking and security features in DOS. Microsoft executives agreed and took the opportunity of the announcement to repeat their familiar refrain. "OS/2 adds another level of function," said Steve Ballmer, senior vice-president for systems software at Microsoft.

"We definitely underestimated the difficulty in spurring the migration from DOS to OS/2," Ballmer said. "Windows [3.0] will demonstrate the power of

graphics and will be a practical introduction for users to the potential benefits of OS/2."

However, given the limits of DOS, Microsoft unveiled some strong new features of Windows in Version 3.0, including enhanced network "awareness," memory management features that enable higher functionality on 1M-byte machines, and improved support for the Dynamic Data Exchange feature, which allows users to easily move data between applications.

Windows 3.0 *users will see this configuration screen*

> "YOU COULD say PC computing is becoming a little impersonal, and we recognized that the DOS interface is not helping us realize our vision."
>
> BILL GATES
> MICROSOFT

Gates, addressing the need for a graphical user interface, said, "You could say PC computing is becoming a little impersonal, and we recognized that the DOS interface is not helping us realize our vision."

However, technical prowess is nothing in the computer business unless all the constituencies are lined up to sell it. There, Microsoft has done its marketing homework. Zenith Data Systems, Austin Computer Systems and Compuadd said they will be the first of many vendors to include Windows factory-configured on the hard disks of every Intel Corp. 80286- and 80386-based system they ship. More than 25 other hardware OEMs said they will include Windows with the DOS they ship with systems. Notably, IBM made no announcement of intent to ship Windows with its Personal System/2 line of PCs, although it did announce an upgraded version of its Current personal information manager software for Windows 3.0.

Add to that broad distribution pipeline the $3 million, 20-city road show announced by Gates to hype the product, as well as a plan to ship 40,000 demonstration copies during the next six months, and you have Windows applications developers talking about gargantuan market opportunities.

Among developers, the talk at last week's announcement was of an unobstructed marketing window for at least the next three years, as customers embrace what is essentially the equivalent to the more expensive Apple Computer, Inc. Macintosh interface for the price of a PC clone.

"Look, I don't want to be quoted negatively on the future," said one third-party product manager, summing up the mood at the announcement in San Francisco. "OS/2 is going to happen, but I am going to pay my rent from Windows for the foreseeable future. Paying the rent is what moves any industry."

3Com's Metcalfe retires but retains consulting post

BY JIM NASH
CW STAFF

After Bob Metcalfe, the 44-year-old founder of 3Com Corp., announced his retirement from the company last week, he decided that he could retrace his life from graduate school onward, build another $400 million company and still retire before turning 65.

The question is, will he accomplish all of it? All Metcalfe, credited as the father of Ethernet, says he knows for certain is that he will become a consultant exclusively to 3Com for one year starting next Monday. Beyond that, he said, he may write a book on the networking world.

Metcalfe has served at virtually every executive post at 3Com. Among them, he has been chairman of the board; president; vice-president of engineering, marketing, sales and marketing, strategies and projects; general manager of three divisions; and senior vice-president of technology.

It is his inability to "find a job that fits" that is pushing him on, Metcalfe said. He had thrown his hat back into the ring for company president last year and was rebuffed by a board of directors that he had helped assemble. One month ago, Metcalfe said he was going to go back to the board to suggest a new role for himself. The consultant post was Metcalfe's own choice, he said last week.

Metcalfe performed computer-network research for Xerox Corp. for eight years beginning in 1972. He founded 3Com in 1979.

Mac users welcome rest of us

Windows 3.0 draws applause, but users say it won't upset the Apple cart

BY JAMES DALY
CW STAFF

Although some argue that Microsoft Corp.'a Windows 3.0 interface could provide a damaging counterargument to the easy-to-use features that once placed Apple Computer, Inc.'a Macintosh in a class by itself, Apple users greeted last week's Windows introduction with the enthusiasm of a preacher who has converted an unbeliever.

With relatively few shops exclusively Mac- or DOS-based, information systems managers said they can now provide users of DOS-based personal computers with the equivalent level of graphical interface that Mac devotees have taken for granted for years.

"I'm looking forward to it very much," said Bill McCloud, a manager at Jet Propulsion Laboratories in Pasadena, Calif., where DOS-based PCs outnumber Macs nearly 2-to-1. McCloud said Windows 3.0 will "radically shorten" his shop's training period for DOS users.

Large shops often have too much invested in their Apple setups to consider a full switchover to DOS machines, and most said they do not even see Windows 3.0 cutting into future Mac purchases.

"It's going to be hard to convince anyone who has used a Macintosh to go back to a DOS-based PC, no matter how good it looks," said Barry Memberg, a computer consultant at Compass Technologies in Camarillo, Calif., and head of a Southern California Macintosh users group. "After all, Version 3.0 is still only an interface running on top of DOS."

Others were less enthused about the new Microsoft interface and complained that early beta-test versions performed sluggishly. "Just because [Windows 3.0] looks pretty doesn't mean it'a as functional as the Mac," said Kim Arledge, microcomputer coordinator at the University of Texas at Austin, where more than 10,000 Macintosh models are installed. Arledge said the effect of Windows 3.0 will be "minimal" at her shop.

Apple users also hedged at a perceived lack of software products specifically designed for the Windows 3.0 interface. Many questioned what level of consistency would exist between applications designed for the older Windows system and those crafted for the updated version. "Application consistency is still a big question mark," Memberg said.

Arledge added that once the hype and hoopla die down, Windows 3.0 is more likely to get PC users to stick with their OS/2 or DOS setups than to draw any Macintosh users away.

Windows

FROM PAGE 1

When all is said and done, Windows 3.0 should more than meet the short-term needs of a user base anchored mostly to 1M- to 2M-byte Intel Corp. 80286-based machines. This will also hold true for some 80386 users if Windows 3.0 can be teamed with the anticipated year-end release of a multitasking DOS 5.0 — which is expected to precede a 32-bit OS/2 with delivery slated for sometime in the first half of 1991.

What this means for OS/2 — now positioned by Microsoft as Windows' "big brother" or "Windows-plus" — is a much longer climb onto the corporate desktop. This has forced a repositioning of sorts for OS/2, now situated at the high end as an equal partner in a two-pronged DOS upgrade strategy.

This contrasts with its initial placement as a wide-scale replacement for DOS and speaks volumes about the speed at which users are actually implementing new technologies. It also suggests a greater interest in extending DOS' capabilities.

Murky view

Estimates of past and future shipments of Windows vary greatly

Source: International Data Corp. and Forrester Research, Inc.
CW Chart: John York

Following the Windows 3.0 debut, many analysts are predicting that any measurable migration to OS/2 outside of niche applications on servers and customized mission-critical applications will not kick off until 1993.

This timetable is underscored by the fact that there were more Windows 3.0-specific applications shipping on the day of its announcement last week than there are OS/2-specific applications available today, said Andrew Seybold, publisher of the Computer Insider'a "Outlook on Professional Computing" newsletter. Cameron Myhrvold, Microsoft's strategic marketing manager for OS/2, said there are more than 600 Windows applications on the market.

Also fueling these predications is that Microsoft, despite its oft-repeated claim that declining prices have eliminated memory upgrades as an OS/2 migration issue, seems to have realized that a large number of users still will not budge.

"I think most people who will adopt Windows are those on a 286 or 386SX machine with 1M to 2M bytes of RAM," Myhrvold said. This profile of an average user consists of someone running one to three applications that are neither runtime-critical tasks nor ones that require a special dollop of memory.

"Unless these users were willing to go out and install additional memory in their machines and upgrade their applications and operating systems, they would not otherwise adopt OS/2. [The upgrade cost] is too high a barrier for many people," he acknowledged.

However, for those information systems managers already looking ahead to the time when users begin to run up against the limitations of DOS — such as even greater memory expansion, lack of security, true preemptive multitasking and multithreading — Microsoft insisted there is no need to plot a special migration path.

"Remember, Windows is still DOS under the covers," said Nancy McSharry, a software analyst with International Data Corp., market researchers based in Framingham, Mass.

The release earlier this month of the long-promised Software Migration Kit for porting Windows applications to OS/2, along with plans to enable Windows' binaries to run unmodified under a future version of OS/2, spells easy migration.

"If you take a long-term or even intermediate view, there aren't going to be any applications on Windows that aren't going to ultimately be on OS/2," Myhrvold claimed, adding that Microsoft will spend a lot of time on installation and upgrade issues to "make sure OS/2 is easy to upgrade from Windows."

Cosmetic effects

BY PATRICIA KEEFE
CW STAFF

Windows 3.0 holds a few pleasant surprises for network users, who will find, among other things, that they no longer have to exit to DOS in order to log onto their networks.

Better yet, through the ease of click and drag, they should find themselves moved further away from the dirty details of connectivity. "The user is now able to effect an event with motion, rather than a long series of typed commands," said Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C.

Furthermore, providing a consistent user interface across networks should reduce network training costs, analysts said.

What it does not do is solve the problem of access to geographic dispersement of information, nor will it allow users to set up a public directory and run log-in scripts within Windows.

The massively revamped Windows is expected to have a mostly cosmetic impact on networking, both in terms of convenience and ease of use. Network users will, of course, benefit from the fact that Windows 3.0 crashes the 640K-byte barrier, eliminating the memory crunch that has hampered Windows usability in network environments.

Perhaps more important are changes enacted in Windows 3.0'a virtual machine environment, said Craig Burton, president of Clarke Burton Corp., which publishes a variety of network-related newsletters.

With Windows 3.0, users can load multiple DOS sessions and have multiple DOS programs executing simultaneously. The network connection comes in when more than one of these virtual sessions tries to request information from the file server. What would happen more often than not, Burton said, is that the network physical layer protocol, such as Novell, Inc.'a IPX, would get confused about which session was requesting information and crash the system — "usually at the worst time possible."

To correct this, Microsoft provided network vendors with a "clean design for virtual devices" to which they could write drivers plugging their network protocols into high memory, Burton said.

Other changes include Window 3.0'a Setup program, which will now recognize the installed network and help the user configure those resources into the Windows environment. Thereafter, according to Microsoft, network access and interaction is performed within the Windows environment. Users can connect or disconnect from file servers via a menu selection in the file manager. Also, previous connections are stored, enabling users to rapidly reconnect with a keystroke or mouse click.

On those networks that support a temporary connection feature, Windows 3.0 will allow the user to browse through the disk drives on the network.

A new print manager replaces the spooler to support local and network printing tasks. It also improves performance and adds options for viewing and manipulating print jobs.

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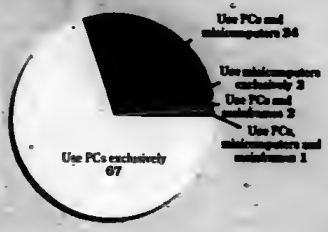
TRENDS

THE LEGAL MARKET

Lawyers today not only have to understand the workings of the legal system but also be somewhat proficient with PC commands

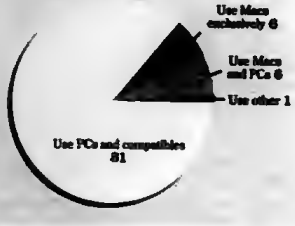
***Personal computers** are by far the most common type of hardware installed*

Number of respondents (Base of 96)



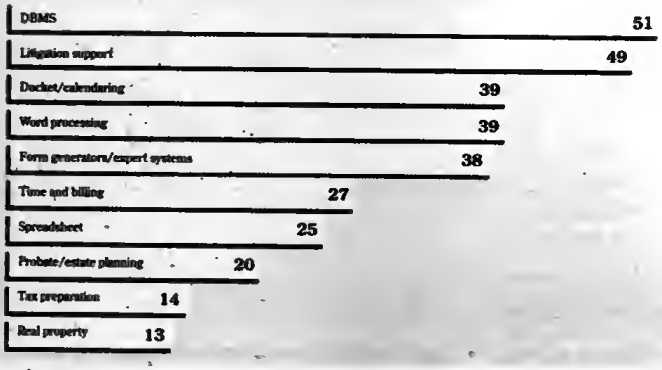
***Among those** who use desktop computers, IBM models and compatibles are the most popular; Apple's Macintosh lags far behind*

Number of respondents (Base of 96)



***More than** half of the responding law firms indicated that a DBMS package is their first choice this year*

Number of respondents (Multiple responses allowed; base of 96)



Source: Computer Counsel, Chicago, Ill.

CW Chart: Tom Monahan

NEXT WEEK

Information technology has been lagging well behind medical technology in the health care field — and Louisville, Ky.'s Alliant Health System is no exception. However, 31-year-old **Parry LaGro**, vice-president of corporate information systems, has big plans to change that situation during the coming year. See Manager's Journal.

Michael Wilson

Predicting the future is always a risky business, but for our Special Report on personal computing, *Computerworld* has assembled a group of expert analysts and asked them to set their sights on a realistic horizon — 1995. What they foresee includes some resolutions of problems standing in the way of maximum productivity from PC computing.

INSIDE LINES

Venture-some recruits

Between seven and 10 Chinese nationals have defected to the U.S. during the last year while here for training at Hewlett-Packard. After coming over to the U.S. as part of a joint venture between HP and a Chinese export company, the workers have dropped out of sight, taking their stipend money with them.

There's always AT&T

There is a small chance that Novell Chief Executive Officer Ray Noorda deliberately ditched merger negotiations with Lotus because a better deal appeared, analysts say. There is a much better chance, however, that another deal will surface in the next 12 months — maybe an acquisition of the Provo, Utah-based network operating system firm. A merger with a large database company is always possible. Or Noorda could be phoning home to AT&T if the always-looking communication giant were to take an equity position in Novell.

Hold out for version 3.2?

One of the beta-test users of Novell's Netware 386 Version 3.1 said the new software is as notable for what is still missing as it is for what has been added. The source said 3.1, which should be unveiled Wednesday, has remote-console ability and open datalink interface, which allows workstations to use their existing proprietary adapter cards to run multiple protocols. However, it is still lacking Macintosh and TCP/IP loadable modules, thus requiring cumbersome bridging.

$oothing the pain

Stratus Computers will announce its new policy this week on recertifying used machines for maintenance coverage. The basics of the policy will reportedly get the blessing of both customers and secondary market lessors, because Stratus will charge nothing to recertify hardware as long as it has not been off maintenance for more than 60 days. To install the VOS operating system, Stratus will charge $12,000, rather than the $50,000 proposed earlier by the company.

Breaking through the gloom

Dark clouds apparently still linger over Computer Associates' acquisition of Cullinet. Ten Cullinet applications developers in Westwood, Mass., left CA earlier this month for what they perceived as the brighter, friendlier skies of Sun Microsystems.

Taking a line to the Mac world

Look for a fall release of a Microsoft package that will allow the connection of LAN Manager to Apple's Macintosh. Insiders say the application will include Named Pipes and an array of security features.

SurpriXe is the name of the game

Wang Labs is getting set to rename its Open/Server product line, according to a source who has seen an explanatory memo. The line will be renamed the Dynamix series, picking up the by-now obligatory "X" for Unix-based products. The strategy is, and we quote: "The definition we will exploit is variation in force or intensity allowing us to convey the scalability of our new family." Phew! The first one out of the box is scheduled to be the DX2000, which will be upgraded to an Intel I486 rather than the planned 80386 microprocessor; however, it is also expected to ship a little late and initially offer much lower storage.

For the last few months, Businessland has been leading the hold-back-the-water crowd predicting higher retail PC prices. That won't happen in the laptop market, at least. Businessland sales exec Jim Heisch said at the Lap & Palmtop '90 exposition in New York last week, "While we have been touting how we're going to increase pricing, I don't think they are going to increase. The competition is too great." So next time you read about how prices are going to stop drop-drop-dropping, reach for the salt shaker, or call News Editor Pete Bartolik at 800-343-6474 (send fax to 508-875-8931 or MCIMail message to COMPUTERWORLD) for a refresher course in market economics.

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WANG

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